DISENTANGLING THE UNIQUE EFFECTS OF CO-CURRICULAR ENGAGEMENT ON SELF-REPORTED STUDENT LEARNING OUTCOMES

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Submitted to the faculty of the University Graduate School
in partial fulfillment of the requirements
for the degree
Doctor of Philosophy
in the Department of Educational Leadership and Policy Studies of
Indiana University

March 2009

Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Date of Oral Examination
8 September 2008

For Beth and Avery

Acknowledgements

Though this study and all the work that preceded it were technically created by me, none of it would have come to existence without the support and love of my wife Beth. She has ever been steadfast, resolute and patient in her investment in my goals and beliefs. Her intelligence, quality, beauty and humor all make me a better man, a small indicator of which is the accomplishment in these pages. We are partners in this life and I would be lost without her.

Our daughter, Avery Isabel, was born about two weeks after I finished the original complete manuscript of this study. She was in my every thought as I neared completion and worked toward the study's defense. She is the center of my universe and has put this work into proper focus and perspective.

My dissertation chair, Dr. George Kuh, has been a consistent, incisive, and wise mentor throughout this process. I am in deep debt to him for his patience and support. He motivated me to improve this study in countless ways and advised how I could do so without becoming hopelessly distracted or lost. My entire doctoral experience has been richer for his involvement in it.

Dr. Tom Nelson Laird served as my methodologist and accommodated my aggressive timeline patiently and adeptly. His expertise allowed me to proceed with clarity and (relative) certainty; his guidance was not that of a junior faculty member but rather of someone wise far beyond his years.

Drs. Vasti Torres and Bruce Jacobs served on my committee and provided excellent insight and direction in both early drafts as well as the final draft of this study. Their practical expertise and scholarship have drastically strengthened the conclusions listed here. Dr. Barbara Dennis also provided valuable feedback in the oral defense process.

The statistical analyses contained herein were challenging in that I had not performed anything of this magnitude before and was learning a fair amount of it as I executed the study. Many people assisted me in staying focused as well as suggesting fresh approaches to quantifying elusive constructs. I thank John Moore for his consistently insightful feedback, Shimon Sarraf for planting the seeds for this study and subsequently helping untangle the syntax required to execute it, and Ali Korkmaz for helping with emergency debugging.

The Center for Postsecondary Research provided an environment for me to thrive in my studies and my completion of this dissertation. Its professional but highly socialized atmosphere helped to motivate me daily. Helen Grace Ryan, Amanda Niskode Dossett, Rob Aaron, Todd Chamberlain, Chad Christensen, Tony Ribera, and Alex McCormick all supported me in unique ways. Justin Bathon and I checked in periodically to ensure we were each making progress, and suffered through the special stress of finishing, job searching, and moving concurrently. Special thanks to Camille Kandiko for demonstrating that existing data can indeed a dissertation make.

Dr. Dennis Roberts has been a constant torchbearer for my work, and has continually pushed me to fulfill what he believes to be my substantial potential. Without his motivation and inspiration, I would be directionless in this profession. His unwavering focus on key ideals sets a high bar for everyone who seeks to improve the student experience.

Finally, my friends and family brought me to the point of being able to achieve this goal. Mom, Dad, Jason, Travis, Beth, Nathan, Madelin, Paco, Dave, Jay, and Bernie have all believed in me continually. And reading and writing in an empty house would have been intolerable without Peanut, Lucy and Ernie to keep me company.

Abstract

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DISENTANGLING THE UNIQUE EFFECTS OF CO-CURRICULAR ENGAGEMENT ON SELF-REPORTED STUDENT LEARNING OUTCOMES

Involvement in activities outside of class has long been assumed as complementary to educational and developmental processes. Since a liberal education approach is meant to address more than academic achievement, understanding the value of co-curricular engagement is crucial to continual improvement of the undergraduate educational process. Understanding how students are affected by their out-of class experiences as well as how those experiences interact with the curriculum can assist educators in creating a better educational environment for all students.

This study uses data from 10,845 undergraduate students at 33 institutions who completed the National Survey of Student Engagement (NSSE) in spring 2006 to explore patterns of student participation in co-curricular activities and their effects on self-reported outcomes. Controlling for in-class engagement and the institutional environment, regression analyses identified relationships between co-curricular engagement and student learning in areas of learning and personal development considered essential for effective performance in the 21st century. In general, students participate in these activities at moderate levels and the benefits they derive are limited, and are concentrated mostly in the personal and social development domains as contrasted with general education and practical competence. More systematic use of effective educational practices and ways to induce students to reflect on their experiences

might improve the strength of these relationships. Implications for research and practice are discussed.

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Chapter One: Introduction

> Among the more important functions of undergraduate education is to expose students to new ideas and experiences that challenge familiar ways of thinking and behaving and prepare them to be productive, civically responsible members of society. Against this yardstick, undergraduate education in the United States is an undisputed success story. At the same time, the world for which today's college students are preparing is vastly different from that of earlier generations. The rapid pace of change demands that students be able to meet head-on and respond intelligently to unprecedented challenges (Kuh, 2001b, p. 288).

Adaptability, problem-solving and learning across contexts are all essential skills for college graduates to successfully navigate contemporary social landscapes and modern careers. College graduates' parents, peers, and co-workers expect that they will leave college not only more knowledgeable but more ethically aware and enlightened than when starting college (Association of American Colleges and Universities, 2007, 2008). A college experience that educates the whole student enables that person to improve society through service, civic action, and respect for diversity.

Public expectations for undergraduate education now reflect the kinds of expansive, life-enriching outcomes that many scholars and leaders have espoused for years (American Council on Education, 1937, 1949; Day, Kingsley, & Silliman, 1829; Feldman & Newcomb, 1969, 1994; Kuh, Kinzie, Schuh, & Whitt, 2005a; Kuh, Kinzie, Schuh, Whitt, & Associates, 2005b; Pace, 1980, 1984; Pace & Connolly, 2000; Pascarella & Terenzini, 1991, 2005). A college education should affect many aspects of students' development, and many aspects of the educational process should be involved in

obtaining these important outcomes. Liberal education as defined here does not refer to a section of the curriculum or a traditional set of courses, but rather a comprehensive experience that fosters total student growth and development.

The Association of American Colleges and Universities (2007, p. 12) recently compiled a set of "essential learning outcomes" that reflect these mandates for the educational experience:

1. "Knowledge of human cultures and the physical and natural world," which should include both factual understanding as well as comprehension of major questions within each appropriate area.

2. "Intellectual and practical skills," including critical thinking, problem solving, and literacy.

3. "Personal and social responsibility," whose components of ethics and culture reflect the importance of education at levels far beyond the classroom.

4. "Integrative learning," which reflects the ability to transfer concepts from one domain to another while retaining an understanding of the key concepts and how they connect, for example, theory and practice.

The first of these outcomes lends itself readily to direct assessment, but the last three involve nuances of student behaviors, attitudes, and interests that make measuring them directly difficult. Even so, colleges and universities are being taken to task for a perceived failure to conclusively demonstrate that they can provide the outcomes listed above, especially in light of issues revolving around affordability, efficiency, and adaptability to changing markets (U.S. Department of Education, 2006). U.S. Secretary of Education, Margaret Spellings, recently convened a commission to inquire into the

effectiveness of higher education. This group's findings initiated a dialogue on accountability among and across colleges and universities. The debate about whether all colleges should focus on some central concept of student learning has raised the specter of standardized testing and blanket assessments irrespective of institution type or size. Cautions against such rash measures from both scholars (Banta & Pike, 2007; Kuh, 2007) and Spellings herself (Basken, 2007) seem to have sufficiently highlighted the importance of institutional context as well as the difficulty of assessing these holistic learning outcomes. In fact, institutions can only partially quantify student learning in terms of outcomes; instead, what happens *during* college is essential to any insight about what students learn there.

For this reason it is crucial that all aspects of the educational experience are as well understood as possible. There is always more to learn, but research surrounding teaching predates that investigating other parts of the college experience (Cabrera, Colbeck, & Terenzini, 2001; Entwistle, 2000; Kirschner, Sweller, & Clark, 2006; Kugel, 1993; Prosser, Trigwell, & Taylor, 1994). Certain pedagogical practices have been identified as maximally effective, like promoting active learning (Chickering & Gamson, 1987; Kuh, 2003b) and propagating learning opportunities through peer collaboration (Osman, Duffy, Chang, & Lee, 2005). The benefits of engagement with the curriculum through these practices have been firmly established through efforts to optimize faculty initiatives.

Important lessons are learned beyond the classroom as well as in it (Berger & Milem, 1999; Kuh, 1993; Pace, 1979; Pascarella & Terenzini, 2005; Terenzini, Pascarella, & Blimling, 1996). Indeed, a substantial body of evidence indicates that

student experiences in clubs, organizations, associations, service, athletics, the arts and other co-curricular experiences have clear benefits. Interacting meaningfully with peers, taking responsibility for organizational initiatives, and integrating class concepts into activities all help students develop in important ways (Kuh, 1995; Pascarella & Terenzini, 2005).

Co-curricular engagement includes a wide variety of student activities and behaviors outside the classroom, and as such is difficult to neatly define. Community service groups, student government, fraternities, athletics, honor societies and religious clubs are all examples of this kind of engagement. It has received substantial scholarly attention for its potential benefits (Abrahamowicz, 1988; Astin, 1977; Berger & Milem, 1999; Foubert & Grainger, 2006; Gellin, 2003; Kuh, 1995; Moore, Lovell, McGann, & Wyrick, 1998). Even so, relatively little research has incorporated the depth of engagement in these activities into the examination of their benefits. For example, leadership in a student organization has an enhanced effect on development along cognitive and moral continua when compared against simple membership (Foubert & Grainger, 2006). Studies like this are few in comparison to those examining co-curricular involvement as a simple binary concept.

As another example of learning beyond the classroom, participation in service learning activities (besides those required for coursework) has been demonstrated as related to moral and ethical development (Jones & Hill, 2003; Payne & Bennett, 1999). Research focusing on specific activities (e.g. Magolda & Ebben, 2006) as well as studies (Astin, 1993) and syntheses (Pascarella & Terenzini, 2005) of extensive scope have begun to disentangle the educative nuances of co-curricular engagement, though this

research takes a simpler approach to the concept than the study presented in these pages. Ethnographies that explore the effect of a single student organization cannot be applied to other experiences, and syntheses of these and other small co-curricular studies provide limited insight regarding the educational outcomes of student involvement.

Despite long-standing interest in co-curricular engagement, specific examination of these activities' effects on gains in desired areas, net of curricular and environmental effects and using data similar to that in this study, has been undertaken only as a minor component of large, overarching data analyses (e.g. Astin, 1993). Because students' learning outcomes can depend on many facets of their educational experience, establishing the specific effects of co-curricular engagement can be done only by taking these other important aspects into account and processing comprehensive data with advanced statistical analyses. This study will satisfy those conditions and provide valuable insight into how co-curricular engagement benefits students while taking into account their academic activities and the institutional environment.

Process Indicators and Engagement

Educators eschew standardized testing for its focus on learning outcomes without considering how those outcomes were achieved. Without knowing how students are devoting their time and energy (Association of American Colleges and Universities, 2008; Pace, 1980, 1995), institutions cannot gauge the reasons behind those students' reported educational gains. Without that insight, it is impossible for schools to capitalize on their strengths and address challenges that affect student learning.

Recognizing that outcomes assessment only partially illustrated the effectiveness of any given educational experience, the federal government recommended that "process

indicators" be developed to measure activities understood to lead to those outcomes (National Center for Educational Statistics, 1991). A framework for such indicators had already been distilled from decades of research by Chickering and Gamson (1987), with the help of top scholars in the field (Gamson, 1991), in an effort to improve college educational experiences. These are known as the Seven Principles for Good Practice in Undergraduate Education (Appendix A).

The Seven Principles are based on "the way teachers teach and students learn, how students work and play with one another, and how students and faculty talk to each other" (Chickering & Gamson, 1987, p. 4). This work focused on the importance of how education is delivered rather than what it delivers (Chickering & Gamson, 1987, 1999), acknowledging that the Principles' goal was not to aid curricular development but rather to create guidelines for delivering content as effectively as possible. This is consistent with research on active pedagogy (Anaya, 1996; Tsui, 2002), time on task (Pace, 1980, 1984), and productive relationships among students (Edison, Nora, Hagedorn, & Terenzini, 1996; Hurtado, Milem, Clayton-Pedersen, & Allen, 1998) and between students and faculty (Kuh & Hu, 2001a; Lamport, 1993).

Since institutions and students interact to determine how students' time is spent (Astin, 1991), process indicators are useful both to better understand student impressions and experiences and, to the point of institutional improvement, assist institutions in creating environments where student learning flourishes. One time-honored process indicator is student-faculty interaction; the more opportunities students have to create and participate in relationships with their teachers, the more they gain from their educations in general (Chickering & Gamson, 1987; Kuh, 2003a; Kuh & Hu, 2001a). For example,

at a rural institution whose faculty live in the nearest city rather than near campus, there will be fewer opportunities for such interaction because instructors will spend more time farther from their students. In that case, the institution may be able to create a better environment for this interaction by clarifying expectations for faculty participation in campus activities. On the other hand, if faculty live close and are available but students show little interest in interacting, the institution may have less control over improvement in that area.

Another example is how students spend their time in the company of peers. Involvement in student organizations, government, and service activities have all been shown to affect educational outcomes (Astin, 1984; Kuh, 1993, 1995; Pascarella & Terenzini, 2005). There might be ample opportunities for students to become involved with these activities at their institution but little encouragement, or vice versa. Alternatively, students at a given institution or of a given background might not be interested in co- and extracurricular activities. Understanding how these activities influence learning outcomes is important for institutions that wish to optimize their environments so that students learn maximally, despite any confounding background characteristics.

Research Questions

The purpose of this study is to examine the relationships between co-curricular student engagement, student engagement in selected curricular activities, and self-reported gains across a range of desirable outcomes of college. In this study, co-curricular engagement is determined by intensity and extensity of student involvement in co-curricular activities.

Intensity refers to depth of involvement or the quality of effort a student expends on a given activity or several activities. For example, a student may report being involved with a political group but in fact only attended a meeting or two in order to learn more about that organization's philosophies and activities. In contrast, another student might have attended every one of that group's meetings and eventually sought a leadership position. The latter student is more intensely involved with the group than the former. Still other students may not want the recognition or responsibility of formal leadership positions, but are invested enough to influence the group's direction or goals. This may also represent a substantial level of co-curricular engagement. Few studies have examined student involvement in this way.

Extensity refers to the number of activities and the time spent on each, as well as in total across them. This kind of engagement is found in students who join multiple organizations and spend many hours each week participating in them. Though a student with high intensity may put forth considerable effort with one or two organizations, a student who is extensively engaged might hop from a club meeting to a team practice to a play rehearsal, accumulating many hours spent on the co-curriculum in total. These students may be more heavily involved in one group than others, but the key to extensity is the number of activities in which they are engaged and the amount of time they spend doing them.

This study will address the following questions:

1) What are the patterns of student co-curricular engagement, as illustrated by number of activities, types of activities, and intensity of involvement with those activities?

2) What are the unique effects of co-curricular engagement on student self-reported gains when controlling for effects of curricular experience and perceptions of campus environment?
3) How does co-curricular engagement moderate the effects of curricular engagement and environment on student educational gains? In other words, does co-curricular engagement enhance or detract from the effects of curricular engagement and perceptions of campus environment?

Contribution to the Literature

This study will contribute to higher education literature by enriching our understanding of the significance of co-curricular engagement for student learning outcomes. Because students must acquire a wide range of skills and competencies to function effectively in 21st century society (Association of American Colleges and Universities, 2005, 2007; U.S. Department of Education, 2006), we need to know more about what institutions can do to help students achieve desired outcomes. Opportunities for co-curricular engagement are plentiful for many students and often self-defined, adapting to student lifestyles more readily than coursework. Improving how co-curricular engagement affects and benefits students is key to helping college and university personnel improve advising as well as optimize the activities offered. The findings in this study will illustrate how students benefit from this engagement and aid institutional efforts to maximize those benefits.

Overview of Dissertation

The remaining four chapters in this study are organized as follows.

Chapter Two outlines the extant research that informs the relationships delineated in this study's conceptual model. Chapter Three discusses the methods of analysis, including instrumentation and data gathering, data preparation, analysis techniques, and limitations. Chapter Four presents the results of the study, organized according to the guiding research questions. Finally, Chapter Five summarizes the study and key findings, presents implications for practice and future research, and draws conclusions about the role of co-curricular engagement in student learning.

Chapter Two: Review of Literature

This chapter examines the factors central to student learning: co-curricular engagement, curricular engagement, and college environments. After establishing a historical context, each construct will be discussed in terms of its foundational concepts as well as its relationships to student gains considered in this study. Defined later, these gains are general education, personal and social development, and practical competence. The chapter will conclude by highlighting areas the literature does not adequately cover and, therefore, will be addressed by this study.

Historical Context

According to Bowen (1977), the intended outcomes of higher education are wide-reaching and varied. While society may need an educated citizenry and employers may need a reliable credentialing system, it is also important that students fully develop as persons and learn to consider new ideas while challenging the assumptions brought with them to college. Sloan (1973) asserted that college students will learn on their own regardless of the curriculum or agenda set before them; if this is true, it is essential to understand the extent to which they learn in different venues.

Before the 20th century, institutions of higher education had historically awarded their degrees by way of a structured student experience (Thelin, 2004). In their earliest American incarnations, colleges had inflexible curricula with limited scope, focusing almost exclusively on the humanities and specifically religion (Lucas, 1994; Rudolph, 1977). Time outside of formal classes was strictly monitored, intended solely as an opportunity to prepare for the coming sessions. Though socializing certainly occurred, the instructors at these early institutions attempted to curtail behaviors not directly related

to the curriculum and organized co- or extra-curricular activities were rare if not unheard of (Horowitz, 1988; Rudolph, 1990).

As deeply rooted German educational philosophies began to influence those in the United States, some doubt arose as to how much autonomy students should have in the courses of their own educations. George Ticknor suggested the idea of electives at Harvard in the 1820s and thereby initiated a debate about whether students could choose their own subject matter (Rudolph, 1977). Naturally, this debate reached into the student ranks and they began to explore outside interests in earnest (Horowitz, 1988; Sloan, 1973).

Students yearning to engage with course material beyond simply memorizing it began to band together in some of the earliest student organizations: literary societies (Horowitz, 1988; Rudolph, 1990; Thelin, 2004). These groups debated each other on scholarly subjects and, as they gained in popularity, amassed academic resources that rivaled their host institutions' libraries (Rudolph, 1990). The breadth of these 'extracurricular' libraries attracted students, since they reached far beyond the usual religious fare.

Over time, these literary societies gave way to men's and women's fraternities: Exclusive groups with stringent membership requirements that provided their privileged members with structured social and academic opportunities beyond the traditional curriculum (Rudolph, 1990). These groups represented the first formal student steps into self-directed study of the world around them. Presently, the co-curriculum plays a part in many students' undergraduate experiences, and is understood as complementary to the educational process. Recent research has created a clearer awareness as to its true

significance (Astin, 1984, 1993; Chickering & Gamson, 1987; Kuh, 1995; Pascarella & Terenzini, 2005).

Constructs Central to the Study

The experiences that comprise co-curricular engagement can be distinguished from those that create engagement within or about the classroom. For this reason, both types of engagement are examined and compared here. Though both are derived from the general underpinnings of engagement (Chickering & Gamson, 1987; Kuh, 2003a; Pace, 1980), the former stems largely from foundational work by Feldman and Newcomb (1969) and Astin (1984) that outlines the significance of student investment in their day-to-day actions. Students spend many hours on activities besides attending and preparing for class. How they spend this time is crucial to their development. Astin in particular underscored the idea of involvement, highlighting the positive effects of many kinds of co-curricular activities (1993). The Seven Principles of Good Practice in Undergraduate Education also partially indicate the importance of engagement outside the classroom (Chickering & Gamson, 1987). Among many others, Pascarella and Terenzini (2005) have demonstrated that this kind of engagement is essential to the educational process.

Engagement in or deriving from course-related activities tends to be of central concern to institutions of higher education, and for good reason. Pace (1980) demonstrated the importance of quality in student effort in learning, and numerous learning theories all indicate that students must be active in their educations in order to optimally benefit (Entwistle, 2001; Nelson Laird, Shoup, Kuh, & Schwarz, 2008; Osman et al., 2005; Savery & Duffy, 1995). Though centrality of this construct is also borne out by theories of involvement (Astin, 1984, 1999) and good educational practice

(Chickering & Gamson, 1987) as synthesized by more recent ideas of engagement (Kuh, 2003a), Tinto's explicit link between in-class engagement and persistence (1975, 1997) supports the importance of this construct.

Any attempt to examine co-curricular and curricular engagement must take into account the environment that students operate in and control for it when possible. Students may have individual characteristics that predispose them to higher levels of engagement, but institutional factors such as size, mission, or quality of student relationships with staff and faculty can have an effect as well (Kezar & Kinzie, 2006; Kuh, Arnold, & Vesper, 1991a; Pascarella, 1985). Two models incorporating key elements of environment are used to inform the current study: Astin's Input-Environment-Output model (1991) and Pascarella's more fulsome general causal model (1985). Besides providing insight on the effect of institutional variables, each of these models incorporates aspects of all the constructs in the present study, providing a useful perspective for understanding their relationships.

Astin's I-E-O model

Astin's I-E-O (Inputs – Environment – Outputs) Model has been used in scores of studies as a framework for understanding how students change during their college years. By separating what is within institutional control from what is not, as well as clarifying a causal structure for how gains are achieved, the model is essential for assessing interventions and other measures designed to improve the educational experience.

The *inputs* in this model are any pre-existing conditions that students bring with them to college. These include baseline abilities and proficiencies as well as past performance that will give proper context to levels in these areas measured at the

conclusion of college. It would be misleading for institutions to conclude their students graduated with a certain level of scores and achievements if they did not know what to reasonably expect from those students in the first place. Incorporating these inputs into any research model helps institutions draw more appropriate conclusions about their own effectiveness.

The *environment* component of Astin's model is central both to this study and many others investigating the value of educational measures and programs in higher education. These are conditions and factors that can influence change in college; Astin listed many variables that fall into this category and grouped them as such:

1) Institutional characteristics
2) Curricular measures
3) Faculty
4) Student peer groups
5) Residence/major/financial aid
6) Student involvement

These are all variable groups that institutions may be able to control, or at least monitor, to some degree. Because these variables are more accessible, colleges can use them to better understand and assess their own environments' effects on students.

In Astin's model, these environmentally-affected phenomena are termed outcomes. They might be directly measurable, like GRE results, GPA, starting salary, or self-reported data like satisfaction and perceived gains in critical thinking. Given the usefulness of process indicators to assess educational experiences and the immediate

opportunities to define and gather them (Kuh, Pace, & Vesper, 1997), these self-reported data can be valuable to institutions looking to improve their students' experiences.

Pascarella's general causal model

Astin's I-E-O model is simple and easy to understand, making it a good choice for scholars doing exploratory research investigating the effects of specific interventions. However, it provides no insight as to how the variables within the environment component interrelate. In order to create a more specific model and test it, the relationships between different kinds of variables must be better defined. Pascarella's *General Causal Model for Assessing the Effects of Differential College Environments on Student Learning and Cognitive Development* (1985) provides the necessary differentiation to understand the salient environmental variables for this study as well as guide creating its structural model.

Astin's I-E-O model (1991) posits a directional relationship with environment playing a mediating role. Pascarella's causal model illustrates both direct and indirect effects on student gains. Precollege traits (the "I" of Astin's I-E-O), quality of student effort, and interaction with "agents of socialization" (Pascarella, 1985, p. 27) have direct effects on student cognitive and developmental gains. Structural characteristics of the institution, including size, admission requirements, and similar factors, indirectly affect student outcome gains. Institutional environment is also an indirect contributor; that construct includes institutional emphases, which this study will consider in its definition of college environment. Figure 1 depicts this model graphically.

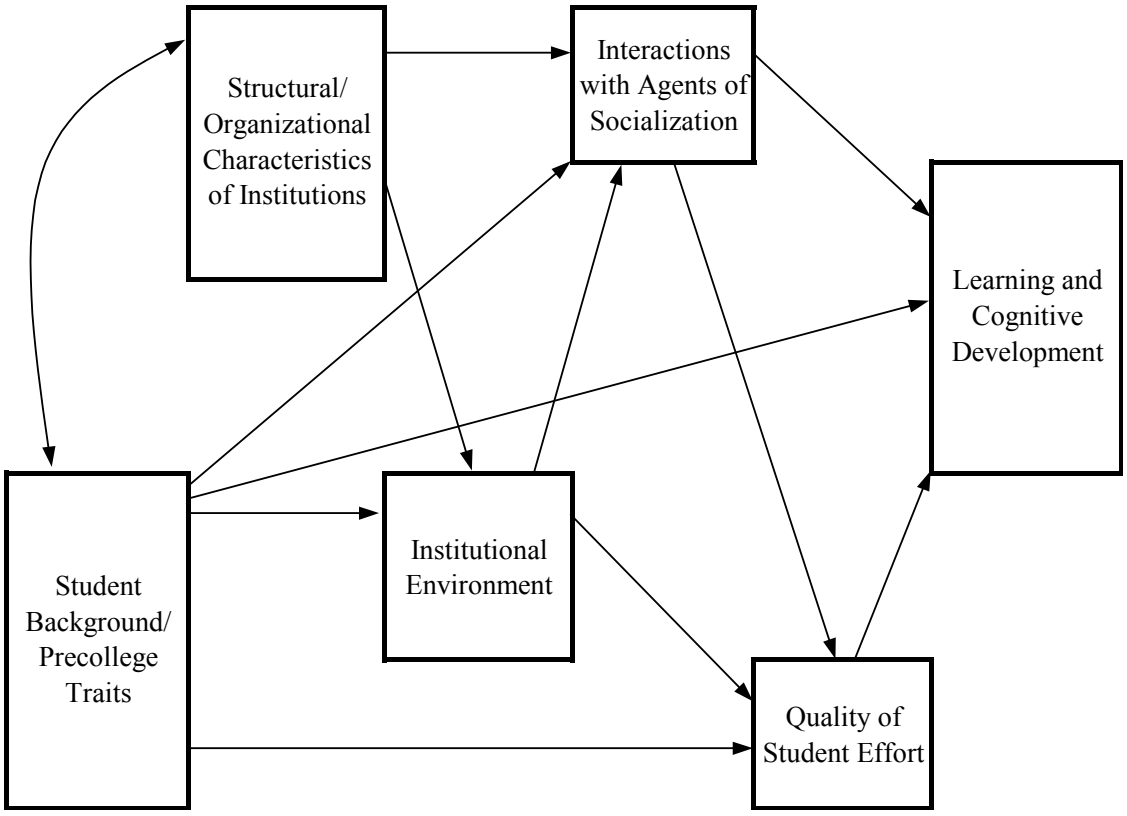

Figure 1. Pascarella's (1985) General causal model for assessing the effects of differential college environments on student learning and cognitive development.

These three constructs play significant roles in how students learn, develop, and benefit in college. Though co-curricular engagement is the primary focus of this study, studying that aspect of the student experience without taking the other two into account would likely yield incomplete and possibly misleading results. Studying environment and curricular engagement alongside co-curricular experiences as well as controlling for them should result in more trustworthy and useful findings.

Student Gains

Because the data for this study are drawn from the National Study of Student Engagement, the gains scales used to measure student growth are derived from factor analysis of college activities items on that survey (Kuh, 2003a). Co-curricular

engagement, curricular engagement, and environment are examined in terms of these gains.

General Education

General education is defined as writing, speaking, and thinking critically and analytically (Kuh, 2003a; Pike, 2006). These are the "earmarks of a well-educated person" (Kuh, 2003a, p. 10), derived from basic educational tenets that hold in both historical and contemporary visions of what higher education is meant to provide its students (Association of American Colleges and Universities, 2007; Bowen, 1977; Chickering & Gamson, 1987).

Personal and Social Development

Personal and social development is defined as building a refined understanding for self and others, developing a structure of values and ethics, learning on one's own, and contributing to the welfare of others (Kuh, 2003a). These touchstones indicate student progress in terms of developmental theories, such as Chickering and Reisser's Seven Vectors of Identity Development (1993).

The Seven Vectors (Chickering & Reisser, 1993) are intended to be comprehensive indicators of student psychosocial development (see Appendix B), And represent necessary dimensions of growth toward discovering who he or she is in relation to others. The earlier vectors, such as Developing Competence and Managing Emotions, involve learning to govern basic social and personal processes. The later ones, such as Developing Purpose and Developing Integrity, build on processes of interaction and understanding the social and emotional landscape's influence on the self. Students need not travel through these vectors sequentially; they may revisit them or adjust their

development in any given area if their experiences so dictate (Chickering & Reisser, 1993).

The items that describe personal and social development in this study all measure some aspect of the dynamics described above. This model addresses students' self-understanding as well as their perception of how they operate within a greater social and global structure. The items comprising this construct assess these same ideas.

Practical Competence

Practical competence is defined as work-related skills, the ability to solve quantitative as well as real-world problems, and proficiency with technology (Kuh, 1993, 2003a; Pike, 2006). Described decades ago as one of the intended benefits of education for the individual (Bowen, 1977) and recently as an "essential learning outcome" by the Association of American Colleges and Universities (2007, p. 12), the capacity for understanding and negotiating complex problems in real-life contexts is a vital outcome for college graduates. In fact, practical competence may be the ultimate benefit of college: Students who can integrate lessons from coursework and co-curricular experiences into a set of skills that helps them negotiate the world more effectively maximize the benefits of their educations. Rather than simply processing the concepts they learn, students can make practical use of those concepts by transferring their key components to the scenarios they routinely encounter in the workplace and beyond after they graduate (Barnett & Ceci, 2002; Kuh, 1993, 1995).

Co-curricular engagement

Co-curricular engagement is a wide-reaching concept; as articulated in theory (Astin, 1984, 1999; Chickering & Gamson, 1987; Chickering & Reisser, 1993; Pace,

1980), meaningful involvement outside the classroom contributes to learning and development as much as coursework does. In fact, some evidence has indicated that out-of-class experiences can legitimately complement those rooted directly in the curriculum (Kuh, 1993).

Effect on personal and social development

As noted earlier, involvement in co-curricular activities is widely assumed to have a positive effect on students' personal and social development. Because this development occurs most readily when students are acclimated to their environments, it is important to acknowledge that participants in student organizations and other activities tend to be better situated at their institutions.

Corroborating colloquial beliefs that students must 'get involved early' in order to 'fit in,' there is evidence that early involvement in the co-curriculum leads to better satisfaction and students' being more comfortable at the institution (Abrahamowicz, 1988; Berger & Milem, 1999). This phenomenon is cumulative, so students who are involved early tend to stay involved and sample more activities to find what they like best. Students who do not take advantage of the co-curriculum in their first term tend to be less satisfied with their experience and may leave altogether. In one study, 65% of students engaged in the co-curriculum said they were enthusiastic about college while 17% of uninvolved students gave the same response (Abrahamowicz, 1988). Formal social ties established though student organizations and other activities were found to positively affect satisfaction for students of all ethnicities (Fischer, 2007).

Co-curricular engagement is positively related to identity development. Though studies that correlate the two are relatively few (Upcraft, Gardner, Barefoot, &

Associates, 2005), there is evidence that members of student organizations have been shown to make significantly higher gains than nonmembers in measures associated with developing both social and personal competence (Reason, Terenzini, & Domingo, 2007). The researchers indicate that the reason for this correlation is "not as clear as those shaping students' academic and intellectual development" (p. 293) but one can surmise that these formal social relationships help students calibrate their own behavior to better match that of their peers.

Co-curricular engagement has also been positively linked to development of purpose (Cooper, Healy, & Simpson, 1994; Flowers, 2002; Foubert & Grainger, 2006). These studies concentrated on membership in student organizations, which normally have some established mission and purpose themselves (d'Amico & Hawes, 2001). As students attach themselves to these initiatives, they reconcile their own sense of purpose against those of the activities in which they choose to participate. These studies associating co-curricular engagement with personal competence and development of purpose indicate that this is an important avenue by which students develop their identities while in college.

Speaking to the effect of co-curricular experiences on students' intellectual and ethical development, Kuh (1995) indicated that students who persisted with certain co-curricular experiences over longer periods of time and did so by interacting with diverse constituencies and peer groups showed the greatest gains in personal reflection and understanding their own motivations and viewpoints. This results from a better understanding of others, both intellectually and culturally (Zúñiga, Williams, & Berger, 2005). Development along Perry's (1968) continuum depends on acknowledging and

incorporating the viewpoints of others into one's own world view, so ethical development due to formal interactions with diverse peers or other college constituencies should be expected. In fact, this phenomenon has been followed so far as to indicate that diverse enough experiences can lead to an increased sense of social justice (Hurtado et al., 1998) and interest in cultural participation (Foubert & Grainger, 2006).

Foubert and Grainger (2006) and Lind (2000) noted that students who took on positions of responsibility demonstrated greater gains in moral development. Though the present study will not investigate matters of moral development explicitly, these studies are important in that they discuss intensity, or depth, of student co-curricular engagement. Using Kohlberg's Theory of Moral Development (1976), Lind concluded that the opportunity for college students to assume some level of responsibility and identify with a role within a group resulted more often in greater progress toward postconventional, or principled, moral reasoning. That is, these students were more likely to make decisions based on their benefit to the greater good and less due to self-interest. Neither of these studies incorporated different levels of involvement beyond the distinction of taking on a leadership position; the current study explores benefits along a continuum of co-curricular depth of engagement.

Perhaps the strongest indicator of the social developmental value of co-curricular engagement is whether or not involved students decide to remain at a given institution (Bean, 2005). Research supports this notion, demonstrating that connections with campus groups (Kuh, 1993; Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006; Pascarella & Terenzini, 2005) and meaningful, sustained support from peers in formal contexts (Mallinckrodt, 1988; Nora, Cabrera, Serra Hagedorn, & Pascarella, 1996) are positively

correlated with persistence. Pascarella and Chapman (1983) found that this effect was greatest in students who were less academically involved, indicating that social integration might serve as a substitute for classroom achievement. These findings imply that a balance between the two is important to student success. Early involvement has already been established as important to satisfaction but is equally essential to persistence (Berger & Milem, 1999).

The personal and social benefits of co-curricular engagement appear to hold for many different groups of students. Though black students have been studied specifically (Flowers, 2004), students of different ethnicities appear to derive similar benefits from this kind of involvement (Fischer, 2007; Kuh, 1995). This is critical not only from an egalitarian standpoint, but also because ethnic 'minorities' comprise an ever-growing segment of the college student cohort (Dey & Hurtado, 2005). Students with part- and full-time jobs likewise represent a growing proportion of college students, and despite having less time to engage in the co-curriculum they manage to reap the same benefits as their unemployed cohorts (Lundberg, 2004). Non-traditional age students tend to have many other obligations besides work and school, so their opportunities for involvement are even more constrained. When they do participate in formal co-curricular activities, though, they too enjoy similar degrees of developmental gains as described above (Graham & Gisi, 2000). The current study controls for many of these demographic variables, accounting for their effects in the correlation between co-curricular engagement and student gains.

Guided by Moore's definition of wisdom as "attending to the details of everyday life as well as to major decisions and changes" (1992, p. 5), Brown (2004) showed that

engagement in the co-curriculum helps to develop this complex quality. Purposeful interaction with peers in groups or otherwise enhances development along six holistic dimensions: "self-knowledge, understanding of others, judgment, life knowledge, life skills, and a willingness to learn" (Brown, 2004, p. 137). These dimensions serve as good analogues to personal and social development as described here.

Effect on practical competence

Though educators generally believe co-curricular engagement to be beneficial to development of students' practical competence, employers do not value these activities in and of themselves (Heckman, 1999). There is evidence, however, to demonstrate the positive effect that the former has on both career preparation and leadership skills.

Foubert and Grainger (2006) showed that intensity of involvement correlates positively with career planning abilities and life management, both of which relate to the items that represent practical competence. This study's most striking finding was that students have progressively higher scores on measures assessing career preparation as they progress from no student organization involvement through attending a meeting, becoming a member, and taking on a leadership role in a club. These results mirror Kuh's (1995) finding that leadership responsibilities foster practical competence, and contribute to trends in the literature that hint at this correlation (Hernandez, Hogan, Hathaway, & Lovell, 1999). Again, though holding a leadership position is here shown to have positive effects, the present study expands on that knowledge to illustrate the effect of progressively deeper involvement.

Formal co-curricular involvement in activities with diverse participants has also been shown to lead to better job preparation years after college (Gurin, 1999). This result

holds particularly well for white students, who learn important lessons about working with others of different backgrounds and transfer those lessons to the workplace; Latino and Black students experience this effect less markedly. These findings are similar to those in many other studies (Antonio, 1998; Astin, 1993; Kezar & Moriarty, 2000; Whitt, Edison, Pascarella, Nora, & Terenzini, 1999).

Leadership development and practical competence. Student leadership development theory is currently experiencing a paradigm shift toward cultivating a collaborative attitude of working toward shared goals, irrespective of the position any given student holds within an organization (Dugan, 2006b). The prevailing contemporary concept of leadership involves more process than product, empowering all students to act with conviction to the end of changing circumstances for the better (Roberts, 2007; Rogers, 2003; Rost, 1993). This relatively new concept of leadership does not guide studies relating it to co-curricular engagement, however. In these cases, leadership is typically measured in terms of working with others in group and management settings, employing specific skills that lend themselves to project completion and solving complex practical problems (Foubert & Grainger, 2006). Evidence from these studies is useful for discovering further effects of co-curricular engagement on practical competence.

One longitudinal study investigated activities that yielded positive effects on student leadership skills after college (Cress, Astin, Zimmerman-Oster, & Burkhardt, 2001). These authors found that participation in internships, community service organizations, and other co-curricular group learning experiences led to gains in leadership ability. In this case, that meant development of "decision-making skills; willingness to take risks; ability to deal with complexity, uncertainty, and ambiguity;

ability to set goals, conflict resolution skills, and ability to plan and implement programs and activities" (p. 20). These skills are analogous to elements of practical competence as measured in the present study. Other studies using data from three different periods across two decades of the Cooperative Institutional Research Program demonstrated a consistent link between club or fraternity involvement and self-rated leadership ability (Antonio, 1998; Astin, 1993; Kezar & Moriarty, 2000). Again, the concept of leadership used in these contexts applies less to the egalitarian principles described by Roberts (2007; Roberts & Huffman, 2005) and Dugan (2006b) above and more to practical skills that enable effective and efficient project coordination and completion.

Effect on general education

Co-curricular engagement has also been demonstrated to affect student gains related to general education, as it is described above. This is to be expected as engagement in different areas tends to correlate in consistent patterns (Kuh, 2003b). Even so, curricular engagement is typically considered almost solely responsible for growth in this area. Understanding how the co-curriculum affects it is key to understanding how students come to engage with the curriculum. Further, as this study is in part concerned with the effect of co-curricular engagement on student gains while controlling for curricular effects, it is essential to see what relationships have already been observed in order to justify making the proper connections among them.

There is contradictory evidence regarding the effect of co-curricular engagement on general education gains. Using a regression analysis, Huang and Chang (2004) indicated confidence that there is no upper limit to the academic benefits of involvement due to their linear relationship. This is in direct contrast to concerns about excessive out-

of-class involvement having a deleterious effect on general education (MacKinnon-Slaney, 1993). To this point, Anaya (1996, 1999) has indicated that overly involved members of student organizations had lower GRE scores than nonmembers. This is consistent with Astin's acknowledgement that students' time and energy are finite, and that investing too heavily in one aspect of college almost certainly incurs a debt in some other area (1984, 1993). The present study will incorporate measures to examine this relationship and clarify its significance.

Co-curricular engagement and cognitive development. In general, co-curricular engagement has been shown to foster development in cognitive and intellectual areas. Residence life associations and experiences (Terenzini et al., 1996), formal peer interactions outside of residence halls (Whitt et al., 1999), and holding leadership positions (Foubert & Grainger, 2006) have all been demonstrated to contribute to analytical thinking and writing skills.

Evidence describing the effect of co-curricular engagement on critical thinking is mixed. Though findings indicate that activities associated with living on campus and joining or leading a student organization (Gellin, 2003; Whitt et al., 1999) enhance critical thinking performance, there is reason to be cautious of this dynamic. At least one study detected a decrease in critical thinking due to peer influence of this sort (Terenzini, Springer, Pascarella, & Nora, 1995b), hypothesizing that a "sense of belonging and participation in a friendly, supportive peer environment may require a partial suspension (or at least not the encouragement) of one's critical thinking skills" (p. 35). This is consistent with popular conceptions of groupthink (Esser, 1998; Janis, 1971), a phenomenon that is described to cause individuals in groups to gravitate toward easy

answers to complex issues. It is possible that students seek comfort in each others' reasoning rather than working to develop their own (Ahren, 2007; Hegarty, 1995; Horne, 2001), especially in homogeneous environments akin to tightly-knit student groups.

Curricular Engagement

Almost every college or university purports to provide a challenging academic experience. Though the benefits of co-curricular engagement have been described above, student experiences in and around the classroom have their own unique positive effects. This section will review research that demonstrates how curricular engagement contributes to the gains of import to this study. These effects are examined in concert with those of co-curricular engagement, which is unique to this study considering the extensive data set used here.

Effect on personal and social development

A small body of evidence demonstrates how curricular engagement positively affects students' self-awareness and ability to learn on their own. This evidence relies on the concept of locus of attribution (Weiner, 1985). Consistent with Perry's Theory of Intellectual Development (1968), students may enter college with a belief that their professors are the authority figures and, as such, responsible for student academic experiences including rewards and punishments. Students who complain about a grade they have been "given" rather than asking what they could have done differently to "earn" a better grade exemplify this attitude. Weiner's theory of attribution (1985) considers where students perceive the control of a given variable to be. When this locus of attribution is relocated internally, students better understand their role and that of their teachers and therefore progress on Perry's continuum. This allows them to learn better on

their own and understand others more completely, contributing to their personal and social development as it pertains to this study.

Experiences with course challenge and higher-order thinking have been shown to prompt an internal locus of attribution in students (Pascarella, Edison, Serra Hagedorn, Nora, & Terenzini, 1996). A study using self-reported data in combination with objective measures of student achievement showed strong links between active learning and adopting an internal locus of attribution (Cruce, Wolniak, Seifert, & Pascarella, 2006). Cruce et al. also corroborated earlier studies that active learning has a positive effect on openness to diversity (Cabrera, Nora, Bernal, Terenzini, & Pascarella, 1998).

Tinto (1997) showed that coursework incorporating common themes and social opportunities "enabled new college students to bridge the academic-social divide that typically confronts students in these settings" (p. 611). That is, this kind of learning experience helps students to more completely understand others. Further, since this curriculum allowed the students a voice in their educational experiences, they were more prepared to learn on their own after having been in these courses. These same results have been suggested by case studies (Blackhurst & Pearson, 1996; Engelkenmeyer & Brown, 1998; Philpott & Strange, 2003).

Effect on practical competence

Similar to co-curricular engagement, much of the curricular effect on practical competence is in the area of career preparation. Some of these studies rely on indicators similar to those studied here, such as active and collaborative learning or self-reported skill development. Others derive from independently gathered student-level data, like GPA.

More time spent studying leads to a higher GPA (Astin, 1993; Pascarella & Terenzini, 1991, 2005). This is consistent with the basic premise set forth by Pace (1979) and embellished by Astin (1984); more time and effort invested in a given aspect of the educational experience results in benefits related to that area. Many studies focus on quantitative indicators of student success like GPA rather than engagement measures. Studies such as these should be interpreted with caution. GPA has indeed been found to correlate positively with salient engagement factors but only weakly; these include active and collaborative learning, reading and writing, and course challenge (Carini, Kuh, & Klein, 2006). GPA can be carefully used, then, as an indicator of curricular engagement in these areas.

Starting salary and salary growth may not be the best, most reliable indicators of practical competence and job-related skills; even so, GPA has been shown to correlate weakly with these variables (Bretz Jr., 1989). Further, if students' majors corresponded to the field in which they were working, the correlation was much stronger.

GPA also correlates positively with job satisfaction (Bretz Jr., 1989) and supervisor performance ratings (Roth, Bevier, Switzer, & Schippmann, 1996). Third-party evaluations of job performance appear to corroborate this latter correlation. It appears that time after completing the degree serves to increase this correlation, reinforcing long-term benefits of curricular engagement on practical skills in terms of career achievement and aptitude.

Across two decades of CIRP data, active and collaborative learning in coursework has been shown to positively and strongly correlate with job-related skills as reported by alumni (Antonio, 1998; Astin, 1993; Kezar & Moriarty, 2000). More generally, and at the

heart of engagement theory, a structural equation model derived directly from Pace's concept of quality of effort (1980, 1984) showed that course challenge and writing challenge yielded benefits in "vocational training, specialized professional education, and career development" (Davis & Murrell, 1993, p. 273).

Because research measuring gains in technology are apparently relatively rare, it is fortunate that some linkages have been established to help substantiate the connection between curricular engagement and skills in technology (Nelson Laird & Kuh, 2005). Especially in majors and eventually careers that required technical skills, students whose coursework was delivered with pedagogies requiring active learning reported being more comfortable with technical aspects of their jobs after college (Colbeck, Campbell, & Bjorklund, 2000). These and the preceding discrete connections between curricular engagement and practical competence are a good foundation but leave a noticeable gap that the present study can help to fill.

Effect on general education

One would intuitively expect curricular engagement to result in gains in general education, since the elements of each construct are conceptually analogous. The parallels between student reports of writing activities, for example, are good predictors of gains in writing. Higher order learning can be expected to dependably predict gains in critical and analytical thinking. The evidence that these constructs are closely related is borne out in a substantial literature base.

The faculty who are primarily responsible for coordinating the experiences associated with curricular engagement also play an important role in facilitating gains in general education (Astin, 1993; Endo & Harpel, 1982; Graunke & Woosley, 2005; Kuh,

2003b; Kuh & Hu, 2001a; Reason, Terenzini, & Domingo, 2006; Volkwein & Cabrera, 1998). Student relationships with faculty, however, will be more fully discussed in the following section concerned with the educational environment.

Learning-centered coursework that avoids passive delivery of knowledge and instead draws on learning theory to involve students has been shown to improve student gains in many areas, contributing to a better perception of their own level of education (Stage, Muller, Kinzie, & Simmons, 1998; Tinto, 1997). Lecture-based classrooms are said to be antithetical to effective education unless there is a focused need to disseminate recent bodies of knowledge quickly, and even then the approach should vary in order to keep students engaged (Kuh et al., 2006). Retaining a component of student participation allows for continued gains in critical thinking and related areas.

Curricular engagement has been shown to increase critical thinking in general; students who spend more time studying show significant gains in this area even when precollege critical thinking abilities are controlled for (Terenzini, Springer, Pascarella, & Nora, 1995a). Active learning, as characterized by in-class participation, has been rigorously identified as a positive contributor to critical thinking skills both quantitatively (Cruce et al., 2006; Murray & Lang, 1997; Whitmire, 1998) and through case studies (Tsui, 2002). Tsui also deducted from her interviews that intentional writing including feedback and revisions was an excellent predictor of critical thinking gains, a finding which has been replicated (Johnstone, Ashbaugh, & Warfield, 2002).

These studies suggest that curricular engagement affects many intellectual, cognitive and related gains while retaining some influence on social and moral development as well. The shared effect between this and co-curricular engagement may

as yet be unclear, but this study will distinguish as sharply as it can in order to assign an accurate measure of how student gains are both discretely and jointly affected by the two.

Student Perceptions of the Environment

Any understanding of what affects gains in any educational domain would be incomplete without consideration of the environment in which those gains are made. All major research in this area makes it clear that institutional conditions and emphases as well as the relationships that develop while in college have profound effects on cognitive, intellectual, personal, social, and moral development (Astin, 1993; Feldman & Newcomb, 1969, 1991; Kuh et al., 2005b; Kuh, Schuh, Whitt, & Associates, 1991b; Pascarella & Terenzini, 1991, 2005).

Though the characteristics and validity of the self-reported data to be used in this study will be discussed fully in Chapter 3, not all aspects of environment can be accounted for in this study. The variables used to represent environment in this case will be institutional emphases and quality of campus relationships with peers, faculty, and administration. Even so, controlling for environmental factors considerably strengthens the analyses used here and further separates this study from previous ones that examined similar phenomena.

Effect on personal and social development

Peer relationships are essential for student investment in college, said to affect "virtually every aspect of development – cognitive, affective, psychological, and behavioral" (Kuh et al., 2006, p. 42). One benefit is student persistence, and many other researchers have found similar evidence linking peer interactions to student intent to remain at the same institution (Abrahamowicz, 1988; Bean, 2005; Berger & Milem,

1999; Kuh, 1993; Kuh et al., 2006; Mallinckrodt, 1988; Nora et al., 1996; Tinto, 1987). In fact, some evidence indicates that peer relationships are even more crucial for students who are not being engaged academically and may serve to inspire those students to stay at the institution, especially if they are in a residential setting (Braxton & McClendon, 2001; Pascarella & Chapman, 1983). When students encounter academic challenges with faculty, peer interaction can provide an alternative means for them to remain satisfied with their experience and committed to the institution. The resulting satisfaction with the educational experience creates an environment ripe for development on personal and social continua.

Peer interactions are thought to have increased value when they occur among or across diverse groups. In these cases, interactions with diversity have been shown to have a positive effect on community awareness and the capacity of students to relate to others different from themselves (Antonio, 1998, 2000; Kuh, 1995). This dynamic has been shown to extend into gains in students' cultural awareness and understanding and eventually their willingness to take on socially just stances (Hurtado et al., 1998; Zúñiga et al., 2005). Institutions with more diverse student bodies tend to graduate students who have had more interracial interactions and take their newfound tolerance and cultural understanding into new environments (Antonio, 2000; Springer, Terenzini, Pascarella, & Nora, 1995).

Student relationships with faculty are also important to gains made in college. Though student-faculty interaction has long been known to contribute to student educational experiences (Endo & Harpel, 1982; Lamport, 1993; Pascarella & Terenzini, 1977), it has recently become better understood. Though students do indeed value

substantive interactions with faculty, it appears as though gains in personal or social areas are either uncorrelated or negatively correlated with informal faculty interactions (Kuh & Hu, 2001a; Umbach & Wawrzynski, 2004). Perhaps indicative of generally liberal faculty, however (Rothman, Nevitte, & Lichter, 2005), students reported becoming more liberal (Milem, 1998) and activist (Astin, 1993) as a result of more frequent faculty interactions.

Institutional emphases on studying, providing academic and social support, and creating opportunities for diverse peer interactions have been shown to have some effect on students' personal and social development. A pair of studies in the early 1990s (Schilling, 1991; Wright, 1992) demonstrated that, controlling for student-level characteristics like SAT scores and high school GPA, institutional emphasis on the core curriculum had a positive effect on students' progress through Perry's (1968) stages, as they demonstrated signs of relativism and therefore better understanding others' perspectives.

Finally, if institutional mission is said to articulate a school's educational emphases, it may have some effect on students' development as well. More specifically, small liberal arts institutions, whose emphases generally include provision of more deliberate academic and social support by design and, extraneous to the mission, by way of their typical "geographic isolation" (Kuh et al., 2006, p. 53), tend to be more engaging on several levels including personal and social development (Hu & Kuh, 2002). Research concentrating on institutional type has confirmed this connection, demonstrating a positive link between small, liberal arts institutions and student gains in altruism and social responsibility (Kuh, 1993; Vogelgesang & Astin, 2000).

Effect on practical competence

Environmental effects on practical competence, as those of co- and curricular engagement, again appear restricted to job- and leadership-related studies. When students receive support from faculty in informal or mentor-type relationships, those students tend to report better preparation for the jobs they have after graduating (Kim & Alvarez, 1995). Interestingly, the slightly negative effect of informal faculty relationships reported for personal and social development does not hold when studying effects on practical competence.

Similar to the effect that participation in diverse student organizations has on career-related skills, informal interactions with culturally diverse peers also better prepare students for after-college jobs (Antonio, 1998; Gurin, 1999; Kezar & Moriarty, 2000). This effect is most pronounced for white students. Beyond culture, however, Whitt et al. reported that interactions among students who are diverse across many spectra – political, religious, and so on – has just as beneficial an effect on career preparation (1999). Leadership skills, related to interpersonal skills and solving real-world problems as discussed earlier, have been shown to improve as a result of diverse interactions as well (Antonio, 2000; Astin, 1992).

These benefits may be muted for white students on less diverse campuses. Because nonwhite students tend to interact and create friendships with students of different races (Antonio, 2001; Hurtado, Dey, & Treviño, 1994), they may not always enjoy the same gains in career development as nonwhite peers.

Effect on general education

Following the logic that institutional type is related to certain approaches to student learning, it is not surprising that small residential schools can generally claim greater intellectual gains for their students (Kuh, Arnold, & Vesper, 1990; Kuh et al., 1991a; Kuh et al., 2006; Kuh et al., 2005b). The faculty at these schools are more focused on teaching and have fewer students, so can craft more challenging learning experiences for their classes. The substantive relationship they forge in these circumstances helps boost students' confidence that they have received a good broad education.

Many environmental effects on general education gains seem to be in terms of critical thinking and related constructs. It is to be expected that institutional emphasis on scholarship and time spent studying would positively affect critical thinking (Prendergast, 1998). Institutions that highlight a strong core curriculum also graduate students who have made appreciable gains in critical thinking skills (Smith-Saunders & Twale, 1997).

Studies exploring the effect of institutional emphasis on computer and technology use have indicated positive correlations between that practice and measures related to critical thinking (Flowers, Pascarella, & Pierson, 2000; Kuh & Hu, 2001b; Marttunen, 1997). Other research in this area has not spoken directly to general education gains but links technology use with activities already shown to result in better critical thinking, like active learning (Hu & Kuh, 2001; Nelson Laird & Kuh, 2005). Hu and Kuh (2001) explored the importance of "wiredness" on campus, which is arguably a good proxy for institutional emphasis on technology. They found that students on wired campuses performed better on several different engagement measures than those at less technologically advanced institutions.

Finally, research has consistently shown that faculty-student interaction has a positive effect on critical thinking (Astin, 1993; Kuh et al., 1990; Umbach & Wawrzynski, 2004). Kuh and Hu also found that informal socializing between faculty and students modestly improved gains in general education, and "substantive interaction" had an even more pronounced effect (2001a, p. 324).

Summary

Though the literature summarized here indicates the various positive effects of student engagement both in and out of the classroom, few studies address their complementary effects, especially using a large national data set such as that analyzed in this study. No studies in this review combined variables concerning both extensity, or number of activities and time spent on them, and intensity, or the depth to which students got involved with those activities. The present study will help to clarify the role of co-curricular engagement by addressing that gap. Besides the unique dimensions of co-curricular engagement considered here, no other studies have made such extensive efforts to control for other important aspects of the student experience. Integrating curricular engagement as well as environment in this way while examining tandem effects of the former with co-curricular engagement further define the value of this study.

Literature describing the effects of co-curricular as well as curricular engagement on practical competence is largely restricted to gains in traditional leadership skills and career preparation. In explicitly exploring how these two constructs interact to effect gains in practical competence as well as two other areas, this study can contribute insight as to the pathways by which engaged students learn more about technology, quantitative problem solving and addressing practical issues.

Chapter Three: Research Methods

This chapter describes the methods used in this study, beginning with the procedure for gathering data and overall properties of the sample, followed by a discussion of construct measurement and validity. Treatment of inaccurate and nonnormal data is then discussed. Data analysis procedures, organized by the research questions to be answered, are in the next section and limitations are at the conclusion of the chapter.

Data Sources and Sample Description

Instrument

The National Survey of Student Engagement (NSSE) is a widely used instrument that reliably measures the process indicators investigated by this study. To date, more than 1.4 million students at 1200 institutions of higher education have completed the survey (National Survey of Student Engagement, 2007). Adapted from items on the College Student Experiences Questionnaire (Pace, 1984) and instruments used by the Cooperative Institutional Research Program (Astin, 1993) and the University of North Carolina system (Kuh, 2001a), NSSE measures how much students are taking part in educationally effective activities and what they are gaining from those experiences (Kuh, 2003a). Many NSSE items reflect Chickering and Gamson's principles (1987) as described in the two previous chapters. The instrument has been described in detail elsewhere (e.g. Johnson, 2007; Kandiko, 2007; Kuh, 2003a; Kuh et al., 2001), and can be found in Appendix C.

Each year, supplementary item sets are administered with NSSE; topics depend on current issues affecting undergraduate education, staff interest, and focal points for

improving the survey instrument (National Survey of Student Engagement, 2005, 2006a, 2007). These items are crafted as rigorously as most surveys in higher education, carefully worded in order to reflect current research and yield useful snapshots of phenomena surrounding engagement.

Though the core NSSE instrument provides some insight into student co-curricular habits, only one item focuses on the amount of time students spend in a typical week on "organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc" (National Survey of Student Engagement, 2006c, p. 3). Drawing on their combined professional experience, a research team comprised of analysts and researchers convened in Fall 2005 and designed a supplemental set of items for the 2006 NSSE administration to better understand the patterns in which students participate in these activities (Appendix D).

Sample

The data for this study were gathered as part of the 2006 NSSE administration, in which 523 institutions gathered responses from almost 260,000 first-year and senior students (National Survey of Student Engagement, 2006a). This number represents a mean institutional response rate of 39%. Institutions could choose to administer the survey by either postal mail or electronic mail. This latter "Web-based" mode used a unique link in each student's message allowing simple access to the online survey; students receiving paper mailings could also elect to complete the survey electronically.

Of those 523 institutions, 33 were selected randomly to receive the supplementary co-curricular engagement item set appended to the online version of the survey; no paper-administering institutions received sets of supplementary items in order to minimize the

cost of this research. Of the 48,893 students sampled at these 33 institutions, 14,059 (29%) completed the core NSSE survey and 7,817 (16%) finished both NSSE and the supplementary co-curricular item set. This last group represents the working sample for the present study. About 44% of the respondents were 19 or younger, 37% was 20-23 and all but .3% were 24-55 years old when they completed the survey. First-year students comprised 49% of the sample and 67% were female, and 91% of respondents were enrolled full-time. All of these figures are consistent with statistics describing the national sample for NSSE 2006 (National Survey of Student Engagement, 2006b), indicating that the sample for this study was reasonably representative of a nationally distributed group. Likewise, the institutions were distributed well across a wide range of types and sizes.

Construct Measurement and Psychometrics

This study uses 47 items that comprise six scales; three scales act as predictor variables and three as outcome variables for the regression analyses described later. The independent variable scales are curricular engagement (Table 1), the institutional and educational environment (Table 2), intensity of co-curricular engagement (Table 3) and two separate items representing extensity of co-curricular engagement: weekly hours spent on co-curriculars and number of activities. The dependent variable scales are gains in general education (Table 4), gains in practical competence (Table 5), and gains in personal and social development (Table 6).

Table 1

Curricular Engagement (α=.73)

Worked harder than you thought you could to meet an instructor's standards or expectations
Come to class without completing readings or assignments (reverse scored)
Extent to which your examinations have challenged you to do your best work
Hours per week spent preparing for class
Institutional emphasis on spending time studying
Prepared two or more drafts of a paper or assignment before turning it in
Worked on a paper or project that required integrating ideas or information from various sources
Number of written papers or reports of 20 pages or more
Number of written papers or reports between 5 and 19 pages
Number of written papers or reports of fewer than 5 pages
Coursework emphasis on memorizing facts, ideas, or methods from courses and readings so you can repeat them in pretty much the same form (reverse scored)
Coursework emphasis on analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components
Coursework emphasis on synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships
Coursework emphasis on making judgments about the value of information, arguments, or methods such as examining how others gathered and interpreted data and assessing the soundness of their conclusions
Coursework emphasis on applying theories or concepts to practical problems or in new situations
Asked questions in class or contributed to class discussions
Made a class presentation
Participated in a community-based project as part of a regular course

Since the supplementary items are unique to this NSSE administration, a description of their structure is warranted here. The first 10 items asked students to designate the number of weekly hours they dedicated to different kinds of co-curricular activities, like athletics, service, or performing arts. The last of these allowed for students to write in activities that they felt were not represented by the previous items. Data from these items were used to address the first research question in the study, regarding

patterns of student co-curricular engagement. These items also furnished the total number of activities and weekly hours spent on them for each student, which are the two components of co-curricular extensity in this study and were integral to answering the second and third research questions.

Table 2

Institutional and Educational Environment (α=.82)

Relationships with other students
Relationships with faculty
Relationships with administration
Institutional emphasis on spending significant amounts of time studying and on academic work
Institutional emphasis on providing the support you need to help you succeed academically
Institutional emphasis on encouraging contact among students from different economic, social, and racial or ethnic backgrounds
Institutional emphasis on helping you cope with your non-academic responsibilities (work, family, etc.)
Institutional emphasis on providing the support you need to thrive socially
Institutional emphasis on attending campus events and activities (special speakers, cultural performances, athletic events, etc.)
Institutional emphasis: Using computers in academic work

Table 3

Co-curricular Intensity (α=.85)

Spending significant time attending meetings, practices, rehearsals, competitions
Spending significant time managing specific projects for the organization
Spending significant time leading or planning meetings
Spending significant time influencing organizational policy decisions

The next section explored the degree of involvement (described as intensity in this study) that students reported for their co-curricular involvement. This is measured with four items on six-point scales: From “Strongly Disagree” to “Strongly Agree” on each question asking if a significant amount of time is spent on progressively more intense

habits. These items comprised the intensity scale (Table 3) for the second and third research questions in this study.

Table 4

Gains in General Education (α=.78)

Institutional contribution to acquiring a broad general education
Institutional contribution to writing clearly and effectively
Institutional contribution to speaking clearly and effectively

Table 5

Gains in Practical Competence (α=.82)

Institutional contribution to acquiring job or work-related knowledge and skills
Institutional contribution to solving complex real-world problems
Institutional contribution to analyzing quantitative problems
Institutional contribution to using computing and information technology
Institutional contribution to working effectively with others

Table 6

Gains in Personal and Social Development (α=.88)

Institutional contribution to voting in local, state, or national elections
Institutional contribution to learning effectively on your own
Institutional contribution to understanding yourself
Institutional contribution to understanding people of other racial and ethnic backgrounds
Institutional contribution to solving complex real-world problems
Institutional contribution to developing a personal code of values and ethics
Institutional contribution to contributing to the welfare of your community
Institutional contribution to developing a deepened sense of spirituality

In his overview of NSSE's psychometric properties, Kuh (2003a) illustrated that the instrument has good reliability, or stability of scores between administrations. The Pearson correlation resulting from test-retest analysis for all items on NSSE was .83. In addition, Kuh found that scores on five separate scales also demonstrated moderate to

high reliability, reporting a Spearman's ρ of anywhere between .74 and .93 in one of two administration comparisons.

Internal validity of the instrument describes the extent to which the survey measures what it intends to measure (Howell, 2002; Mertens, 2005). NSSE researchers have conducted extensive focus groups and cognitive interviews with students to ensure that those answering the items are interpreting them as intended by those who wrote them (Kuh, 2003a; Ouimet, Bunnage, Carini, Kuh, & Kennedy, 2004), demonstrating the internal validity of the instrument.

Scales used to measure the constructs central to this study have also been determined to be valid. The curricular engagement scale is made up of several smaller scales tested by Pike, coined "scalelets" (2006, p. 550). There were no pre-existing scales to measure this construct adequately while excluding items that may tap into co-curricular experiences as well, and these more focused item sets allowed curricular engagement to be defined more carefully while keeping it separate from out-of-class experiences. Pike showed that scores on the scalelets that comprise this study's measure of curricular engagement correlated highly with gains in general education (see Table 7).

Table 7

Scalelet correlations with Gains in General Education (Pike, 2006)

Scalelet	Correlation (r)
Course Challenge	.670
Active Learning	.563
Higher-Order Thinking	.660
Writing Experiences	.639

As this study is concerned with co-curricular engagement along dimensions of both intensity and extensity, it is appropriate that the curricular engagement scale includes items that approximate this dynamic in that area as well. Though these characteristics are not examined discretely, there are elements of "curricular extensity" in items such as those asking how many papers of different lengths students have written or how many hours per week they spend preparing for class. "Curricular intensity" is approximated by items asking how hard students worked to meet an instructor's expectations or the degree to which their coursework emphasized progressively advanced cognitive processing.

Since the co-curricular engagement scale was created for this study, there is no pre-existing validity measure for it. Implications for its validity will be reported in Chapter 5; the scale's reliability (as reported in Table 3) is sufficient in the meantime to warrant exploratory use of the scale.

The variables that comprise the institutional and educational environment are nearly identical to those established by Kuh (2003a), differing only in the addition of a new NSSE item measuring institutional emphasis on technology (National Survey of Student Engagement, 2003) and the exclusion of the items indicating whether the student would choose the same college if given the chance and asking about the student's satisfaction with the entire college experience. Taken together, the items contained in Kuh's (2003a) factors explain 61.3% of the variance in student responses.

Kuh tested each of the three gains scales (Tables 4-6) used in this study as well (2003a); the same factor structure as is used here explained 57.3% of the variance in student responses. In addition, research has shown positive correlations between the gains

in general education scale and college GPA (Carini et al., 2006; Kuh, 2003a) and gains in practical competence are demonstrated by students in science and other applied majors expected to assist with those variables (Kuh, 2003a).

Data Preparation

Data in any study must be examined for accuracy and potentially misleading or confounding issues. In order to ensure maximally informative results, Tabachnick and Fidell (2003) recommend three steps: Checking accuracy of the file for out-of-range and properly identified missing values, dealing with missing values, and reconciling nonnormality.

Checking Accuracy of the Data

Several items in the co-curricular set call for open-ended student reports of number of hours spent in various activities. Most of the responses to these questions are reasonable, but each item had several practically impossible responses as well (such as the student who reported spending 168 hours per week in bodybuilding activities). Total student hours reported may not accurately reflect student habits, and may include estimation errors. Kuh (2003a) suggests that 80 hours per week spent on activities other than class and sleeping is feasible, so that figure serves as the upper limit of total hours spent on co-curricular activities. Cases reporting more than 80 weekly hours on any combination of activities, which would reflect maximum investment of free time outside of class preparation, were dropped from the sample.

One exception is if the number 168 appeared for residence life; this appeared to indicate that certain activities were always happening, 24 hours a day (24 hours x 7 days = 168). So the student who indicated spending 168 hours a week playing chess was

dropped, but those who reported the same figure for residence life were likely resident assistants and were retained. To reflect the realistic extensity of involvement in residence life, any number in this category greater than 80 was recoded to 80.

Students with more than 90 hours between these co-curricular items and the NSSE item asking about weekly hours spent preparing for class were also dropped. The lowest possible value in the range for each response to this latter item was assumed for this last deletion. These deletions, based on data accuracy, account for removal of 203 cases (2.5%), reducing the sample to 7,602.

Students explained hours listed in the "other" category in many ways. Activities that would not be described as co-curricular made up 31% of these responses; examples included work, parenting, research, and homework. Another 22% appeared to be restatements of hours listed in another category. Many were not explained at all, leaving only 13% of the "other" responses as potentially legitimate. Because of the uncertainty in this variable, hours listed here were not counted toward the co-curricular weekly total.

Finally, a variable was created to reflect the number of activities in which students reported participating. Since there is no reason to apply a maximum number to this figure, categories were added to the total number of activities if the hours spent on them were nonzero values.

Missing Data

Consistent with reports that missing data on NSSE are minimal (Ouimet et al., 2004), almost all variables had less than 1% missing values. Missing data became more prevalent in items later in the survey, supporting claims of survey fatigue or disinterest that have been noted by many researchers (e.g. Gonyea, 2005a). Even so, those later

items had a maximum of 65 missing values, or about one-half of one percent. These missing values should not present a detectable problem for listwise deletions occurring when performing the analysis.

Several students failed to enter a value for the number of hours per week they spent on certain co-curricular activities. These omissions seem to be consistent with the idea of *satisficing*, which describes how subjects may choose the easiest response on an item if the best choice is not obvious or, alternatively, choose not to respond if doing so would imply the correct value (Simon, 1997). Given guidelines for estimating missing data, it is acceptable to assume that missing values for these questions are equivalent to zero and recode them as such (Fichman & Cummings, 2003; Tabachnick & Fidell, 2003). That is, students leaving weekly hour estimates blank for specific kinds of activities are more than likely not involved with those activities at all.

Missing data for the intensity items must remain missing, as the value of "9" that is used for "not applicable" responses is misleading on a 1-6 "strongly disagree" to "strongly agree" scale. As such, all "not applicable" responses on these items were also recoded to missing in order to preserve the items' scale.

Nonnormal Data

Though regression analyses are robust to violations of normality (Tabachnick & Fidell, 2003), some simple steps can help normalize data when possible. The most problematic variables were those measuring hours spent in a typical week on specific kinds of co-curricular activities; as expected, relatively few students in this sample spent any hours at all, for example, on campus-based publications or with religious student groups. Skewness in these items got as high as 13, and kurtosis as high as 238. Because

this study is not concerned with the effects of each specific activity, collapsing these variables into a single weekly hours variable both simplified the data and remedied much of the nonnormal trend. The new variable had skewness of 2.41 and kurtosis of 5.5. This variable illustrating total hours spent on co-curricular activities demonstrates sufficient normality as to be a good indicator of involvement extensity in this regression study.

Standardization and Weighting

To optimize interpretation of the eventual regression coefficients, all variables were standardized so that they each had a mean of 0 and a standard deviation of 1. This makes it possible for different pairs of coefficients to be interpreted on the same scale. In addition, two items indicative of less engaging habits (memorizing course material and coming to class unprepared) were reverse-scored.

The intensity scale requires some manipulation to reflect its proper meaning; because each of its constituent items describes a more intense type of involvement than the one before it, these items should be weighted in order to create a useful aggregate score. That is, since leading a meeting is more "labor-intensive" than just attending the meeting, a response of "agree" on the former should count for more than an identical response on the latter.

Unfortunately, there is a little research to guide the creation of these weights. Foubert and Grainger (2006) provide the most promising template. Using data from the Student Development Lifestyle and Task Inventory (Winston, Miller, & Prince, 1987), they demonstrated that students who led organizations demonstrated higher gains along developmental scales. Their data is reported in its original scales and is difficult to metaanalyze, but most mean differences between those who attend meetings and those

who led organizations appear to be about 30%. As such, the weights assigned to responses on the present study's intensity scale add 10%, or .1, for each successive position beginning with positive responses. Negative responses (e.g. "disagree") were recoded to zero because they reflect the degree to which students report *not engaging* in "intense" behavior. Conceptually, any negative response on these items reflects absence of the behavior, which is a shortcoming of the item set's construction (see Table 8).

Table 8

Weights for Co-curricular Intensity Scale

Item	Responses (weighted scores)
Working on projects for the group	Somewhat agree (1.4), Agree (2.5), Strongly agree (3.6)
Leading or organizing meetings	Somewhat agree (1.8), Agree (3), Strongly agree (4.2)
Influencing policy decisions	Somewhat agree (2.2), Agree (3.5), Strongly agree (4.8)

Creation of Control Variables

In order to ensure the most useful analysis and account for maximum variance (Flowers & Pascarella, 2003; Pascarella, Wolniak, & Pierson, 2003), independent variables representing student background characteristics were established by dummy coding demographic data from NSSE in order to create dichotomous measures. These variables include gender, full time/part time status, first-generation status (as defined by whether either parent has any college experience), fraternity membership, participation in athletics, ethnicity, academic major, age, on-campus residence, and transfer status.

Data Analysis

To review, the research questions in this study are as follows:

1) What are the patterns of student co-curricular engagement, as illustrated by number of activities, types of activities, and intensity of involvement with those activities?
2) Controlling for effects of curricular experience and perceptions of campus environment, what are the unique effects of co-curricular engagement on student self-reported gains?
3) How does co-curricular engagement moderate the effect of curricular engagement on student educational gains? In other words, does co-curricular involvement enhance or detract from the effect of curricular engagement?

The software used to perform these analyses is Statistical Program for the Social Sciences (SPSS), version 16.0 (SPSS, 2007). While the first question requires straightforward descriptive analyses, the second and third questions require multivariate analyses.

The models justified by the research presented in Chapter Two depict a series of correlations between three independent variables (co-curricular engagement, curricular engagement, and the institutional and educational environment) and three dependent variables (gains in general education, practical competence, and personal and social development). Each of the former has been determined to have some effect on each of the latter. These relationships can be described using three multiple regression analyses (Figure 2). Multiple regression allows for the prediction of an outcome variable given its correlations with any number of independent variables in a known data set. The model presented here incorporates primary elements of Astin's (1991) I-E-O Model, as the variables on the left represent environmental factors and the right represents outcomes. In

terms of Pascarella's (1985) General Causal Model, socializing agents, institutional environment and quality of effort are all represented in the predictor variables.

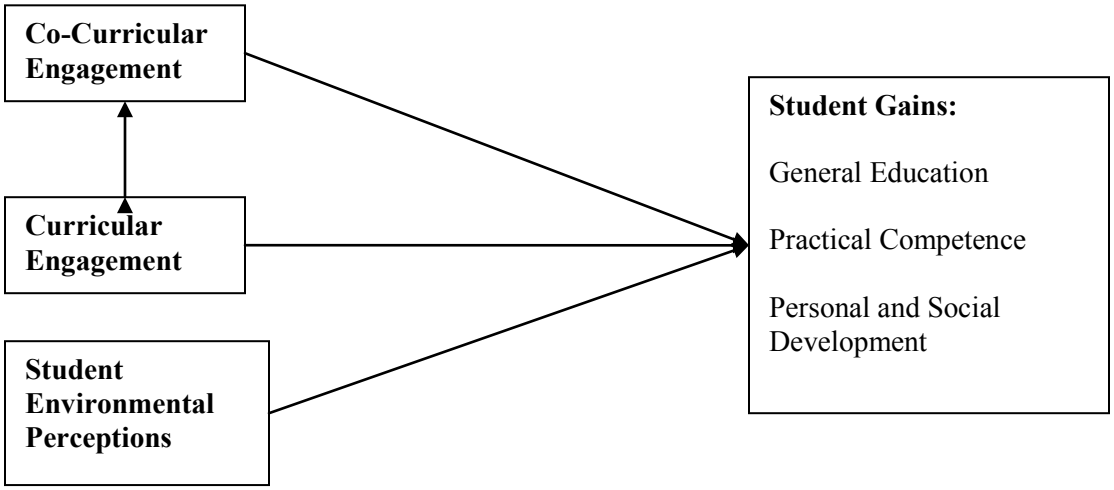

Figure 2. Regression model for determining the discrete and joint effects of co-curricular engagement and curricular engagement on student gains.

The following three sections describe the analytical methods used to address each of these questions.

Question One

Descriptive statistics (including means, frequencies, and ranges) were calculated for the data, which was split by class (first-year and senior). These analyses were also performed for groups based on gender, race, age, and first-generation status to check for differences based on these characteristics. For each group, frequencies of each extracurricular activity were established along with means and ranges. This should adequately illustrate what kinds of activities students are taking part in, and to what extent. Further, a new variable was computed to total all items in this group with nonzero values, indicating the number of activities that each student was involved in. Frequencies,

means and ranges were also calculated for this variable. The same analysis was performed for the intensity scale score.

Question Two

Multiple regression examines the correlations between independent variables and some dependent variable, determining the extent to which each of the former contribute to changes in the latter. Because there are three dependent variables in this study, all regression analyses will be performed identically for each.

Controlling for curricular engagement and student environmental perceptions is built into the regression model; comparison of these scales' beta weights and those of co-curricular extensity and intensity will illustrate the magnitude of co-curricular engagement's effect. As such, each of the scale score variables student gains in this study were entered as dependent and the three scale scores for co-curricular engagement, curricular engagement, and the institutional and educational environment were entered as independent variables.

To check whether any effects noted in this analysis vary based on student characteristics, interaction terms were created to incorporate race, first-generation status, age, full-time/part-time enrollment, and gender into each regression. These variables measuring conditional effects were entered as separate blocks for each dependent variable.

The Durbin-Watson statistic and casewise diagnostics were used in order to check assumptions of normality and independence among the residuals as well as ensure that outliers are accounted for. If outliers were detected during this analysis, they were

confirmed as appropriate to remain in the sample or removed, and the data was reanalyzed.

In addition to regressing each gain on the three independent variables, standardized residuals (differences between observed and predicted outcome scores) will be used to test the regression assumptions of normality, homoscedasticity, and independence of errors among them.

Question Three

The condition of moderation indicates a synchronous interaction between two variables (Baron & Kenny, 1986). After confirming that curricular engagement has a linear increasing effect on student gains as the level of co-curricular engagement rises (Huang & Chang, 2004), the moderating effect of the two can be estimated by introducing a product of the two into the regression analysis. The resulting coefficient for this interaction term can be used to describe the moderating effect of co-curricular engagement on curricular engagement. All residual analyses will be performed as in the section above in order to ensure satisfaction of regression assumptions.

Limitations

This study has several limitations. First, student data outside of demographics are unavailable and therefore unused in this study. There is no way to know the predispositions of each case or to control for them; having this information would lend deeper perspective and interpretive power to the results because the analysis could account for how students evaluate their gains and temper gains scores with that information. Without any baseline data, this is impossible in the present study (Pascarella, 2001).

Second, the use of self-reported data raises certain important considerations. Analysis of this information without baseline data, such as in the present study, is open to criticism because researchers cannot be certain about the true effects of colleges in contrast with student predispositions. Blind to student characteristics or tendencies before college, gains may be attributed to college when student race, gender, culture or attitude also influenced the change (Pascarella, 2001).

Pike (1996) found that self-reported data is a reasonable proxy for achievement test scores, though not to be used as a simple substitute. He further advised that self-reports could be used to inform broad institutional policy, if not focused educational interventions that are heavily dependent on individual students' data. Gonyea (2005b) warned more explicitly against sole use of self-reports in making decisions and strongly urged that researchers triangulate their data in order to have better confidence in its implications.

There are guidelines for ensuring the validity of self-reported data. These include ensuring students understand the questions and can recall the proper information to answer using appropriate response options, and that they do not feel threatened or otherwise made uncomfortable by the questions' phrasing or intent (Gonyea, 2005b). As Kuh (2003a) illustrated, NSSE "was intentionally designed to satisfy these conditions" (p. 4).

Nevertheless, self-reported data tend to be highly correlated across constructs when students have difficulty differentiating subtle concepts regarding their own development (Pike, 1999). Though researchers should make efforts to account for this error, it is impossible to remove its effects from the present study because there is no

objective data to correlate with student reports. Special care should be taken with interpretations of first-year student self-reports because the halo effect diminishes as the student develops.

Third, the study contains no students in their second and third years of college. These are periods where students might become more extensively and intensively involved with co-curricular activities, as they are no longer in a stressful adjustment period and are not preoccupied with decisions about what to do after they graduate.

Fourth, the data examined in this study are not fully representative of American higher education and the analyses are not absolutely generalizable. The 33 institutions from whom these data were collected comprise only a fraction of the thousands of accredited colleges and universities nationwide, and most schools' cases represent only a sample of their own student bodies. Further, since Web-based survey responses have been demonstrated as indicating higher levels of engagement than those submitted by paper modes (Carini, Hayek, Kuh, Kennedy, & Ouimet, 2003; Tomsic, Hendel, & Matross, 2000), the responses may be slightly inflated due to all institutions in the sample administering NSSE by Web. The analyses in this study should therefore be interpreted with appropriate caution.

Finally, the supplementary items in the co-curricular set have not been subject to confirmatory analyses, such as cognitive interviews, to ensure they do measure what they are meant to. These items would likely benefit from further refinement in order to be of maximum significance to the present study. More items that deeply explore the intensity of co-curricular engagement would lend better depth to the conclusions drawn here. For example, there are many types of co-curricular activities with just as many ways to

describe depth of involvement with them. A student in a choir might describe intensity as number of hours spent rehearsing or practicing alone, rather than taking leadership roles in the group. More response options in this area would expand the possible implications of intensity for this study.

Chapter Four: Results

This chapter presents the results of this study, the purpose of which was to examine the effects of co-curricular engagement on gains in general education, practical competence, and personal and social development. The findings are organized to respond to the research questions stated in Chapter 1. In cases where conditional effects were discovered, only those of significance are discussed.

1. **What are the patterns of student co-curricular involvement, as represented by number of activities, types of activities, and intensity of involvement with those activities?**

Table 9 shows the frequency of first-year and senior student participation in co-curricular activities.

Participation in recreational and sporting activities is very high; 50% of first-year and 41% of senior students who are involved in any activities at all report spending some time in these pursuits. While it is unclear if this figure refers to varsity, club, or intramural sports, 20% of first-year and 11% of senior students reported participating in varsity athletics elsewhere in NSSE for this sample. The majority of those reporting involvement in athletics for this sample, then, are probably referring to activities outside of varsity sports. At least a third of involved students spend time with religious organizations, and service organizations and performing or visual arts groups round out the activities that draw at least a quarter of undergraduate students.

Table 9

Frequency of Student Participation in Selected Co-curricular Activities

Activity	First-year students	Senior students
Athletics	50% (n=2024) 8.26 average weekly hours	41% (n=1525) 7.99 average weekly hours
Religious group	37% (n=1476) 3.13 average weekly hours	33% (n=1240) 3.72 average weekly hours
Service organization	32% (n=1295) 3.58 average weekly hours	36% (n=1367) 4.78 average weekly hours
Performing/ Visual arts	29% (n=1157) 6.94 average weekly hours	24% (n=910) 7.58 average weekly hours
Residential life programs	27% (n=1069) 4.07 average weekly hours	12% (n=429) 6.29 average weekly hours
Academic/honor club	17% (n=668) 2.72 average weekly hours	34% (n=1274) 3.01 average weekly hours
Fraternal organization	14% (n=552) 6.68 average weekly hours	16% (n=600) 6.23 average weekly hours
Student government	7% (n=261) 3.16 average weekly hours	7% (n=258) 4.63 average weekly hours
Student publication	5% (n=196) 3.43 average weekly hours	7% (n=270) 5.14 average weekly hours

The difference in participation rates for residence life programs (27% of first-year students compared to 12% of seniors) is to be expected as fewer students live in campus housing after the first year. Seniors participate at a higher rate in academic clubs than first-year students, perhaps because they have settled on their major courses of study and are better able to demonstrate eligibility for such organizations. Due to their exclusive or specialized purposes, relatively low rates of participation in fraternal organizations (14-16%), student government (7%) and publications (5-7%) are also to be expected; this is consistent with established understandings of campus ecology (Barker, 1968; Walsh,

Craik, & Price, 1992), which asserts that students can only participate in the opportunities available to them. As students must presumably gain experience and familiarity with certain activities to take on roles of increasing responsibility, it makes sense that seniors would report higher weekly hours in residence life, student government and publications than first-year students.

Certain student characteristics are related to participation patterns in some of these activities. For example, American Indian, Asian and Pacific Islander, Latino, and African American students participated in service organizations at a much higher rate than most other students (45-47%). In addition, 15% African American students reported some involvement with student government, which is well above the figures in Table 9. Though other differences by student background or demographic were small, students over 25 years old reported much lower rates of participation in athletics (25%) and residence life activities (4%) than the rest of the sample.

Of students involved in at least one activity, two thirds (67%) of both seniors and first-years participate in only one or two different activities. Students involved in five or fewer activities comprise about 98% of the sample. Students reported being involved with an average of 2.2 activities for 10.7 hours a week. Patterns of involvement across multiple activities are consistent from first-year to senior students, with only slightly more first-years participating in two activities than seniors (see Table 10). Students over 25 years old reported being involved in fewer activities than most, with an average of 1.8 and almost 80% being involved in one or two activities. Otherwise, students demonstrated the same extensity of co-curricular involvement across race, first-generation status, enrollment status, and gender.

Table 10

Student involvement in multiple activities

Number of activities	First-year % (n)	Senior % (n)
1	36.0% (1411)	39.1% (1410)
2	30.4% (1194)	27.8% (1003)
3	18.2% (715)	18.1% (652)
4	9.5% (374)	9.2% (333)
5	3.9% (154)	3.6% (130)
6	1.4% (56)	1.4% (51)
7	0.3% (13)	0.3% (12)
8	0.1% (2)	0.2% (8)
9	0.1% (5)	0.1% (5)

Students also reported the amount of effort they put into these activities, or the intensity of their participation. As illustrated in Tables 11 and 12, as participation in co-curricular activities required more effort, fewer students were involved. Table 11 shows the percentage of each class that reported some participation in each level of co-curricular effort. Table 12 shows how many students in each class fell into each quartile of the intensity scale.

Table 11

Participation in progressively higher levels of co-curricular effort

	Percent of students reporting some degree of this behavior	
Level of intensity	First-year	Senior
Attending meetings	58.2%	57.1%
Managing projects	35.0%	47.6%
Leading or planning activities for the group	25.2%	43.4%
Influencing organizational policy	24.2%	36.1%

Since the behavior "attending meetings" was intended to define the least intense form of participating in an activity, it is surprising that so relatively few students reported this. The lack of meeting participation may be indicative of more individual participation away from a group setting or organized structure. Less surprising, of course, is that seniors routinely reported higher levels of effort for other activities compared with first-year students. Having possibly been involved with those activities for two or three more years than their less experienced peers, seniors would have more opportunities to assume such positional roles as president or captain or otherwise influencing policy and shaping organizational culture by way of their seniority within the group.

There were no consistent deviations from this pattern based on student race, gender, or first-generation status. Adult students consistently reported participating in meetings, managing projects, and leading organizations at a proportion 5% less than the rest of the sample. These students reported influencing organizational policy at the same rate as all others, however.

Table 12

Intensity scale frequencies by score

Intensity range (total score range 0.0 - 15.6)	First-year	Senior
0.0 – 3.9	66.8%	53.3%
4.0 – 7.8	18.8%	18.0%
7.9 – 11.7	5.8%	15.4%
11.8 – 15.6	4.6%	13.3%

Table 12 shows that senior students devote more effort to co-curricular activities than do their first-year counterparts. About 35% of both first-year and senior students report participating in no intensity-related activities, which is consistent with the relatively low

incidence of even attending meetings regularly and explains the high frequencies in the first quartile above. The prevalence of this zero intensity score indicates that many students report being involved to some degree but not participating in the group aspects of co-curricular activities. Instead, they may be part of a group or activity without having as much investment in the activity's organizational dynamics.

2. **Controlling for effects of curricular experience and the institutional and educational environment, what are the unique effects of co-curricular engagement on self-reported student gains?**

Correlations among variables of interest to this study are illustrated in Table 13. There are moderate correlations among the gains scales (general education, practical competence, and personal and social development) as well as between the two major control variables, curricular engagement and environmental perceptions, and the gains scales. These correlations are to be expected since all of these variables represent elements of a coherent, effective educational experience, and other researchers have found general positive correlations among many NSSE items for this reason (e.g. Ahlfeldt, Mehta, & Sellnow, 2005). Weaker (but still moderately significant) correlations found between co-curricular engagement items and gains scales are encouraging, because they may predict a meaningful relationship among these principal concepts in regression analyses.

Table 13

Correlations of variables

Variable	Intensity	Number of activities	Total co-curricular hours	Curricular engagement	Environmental perception	Gain in general education	Gain in practical competence
Number of activities	.231 **						
Total co-curricular hours	.238 **	.427 **					
Curricular engagement	.183 **	.179 **	.087 **				
Environmental perception	.112 **	.139 **	.054 **	.465 **			
Gain in general education	.108 **	.110 **	.037 **	.500 **	.533 **		
Gain in practical competence	.116 **	.082 **	.025	.492 **	.595 **	.678 **	
Gain in personal and social development	.157 **	.193 **	.078 **	.443 **	.612 **	.572 **	.609 **

** Correlation is significant at the 0.01 level (2-tailed).
Listwise N=5058

Confirmation of assumptions

For each regression analysis examining the relationship between co-curricular engagement and each of the three gains scales for first-year and senior students, assumptions of homoscedasticity, normality, and independence of errors were first checked using scatterplots and review of the Durbin-Watson statistic. This statistic is measured on a range of zero to 4, and is close to 2 if no significant correlations exist between residuals. The betas for variables of interest are then examined for significance, and the total model fit is discussed in terms of explained variance.

The Durbin-Watson statistic was 2.03 and 1.97 respectively for first-year and senior students in this model. These values indicate sufficiently low correlations between residuals, but scatterplots of standardized residuals against predicted values (Figures 3 and 4) can assist in confirming that essential assumptions are met.

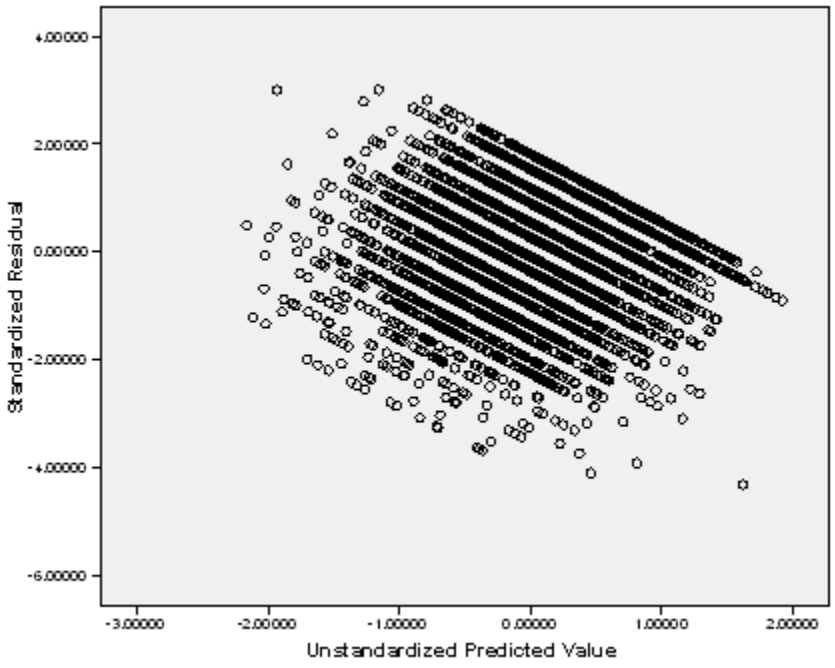

Figure 3. Residuals scatterplot for first-years' gains in general education.

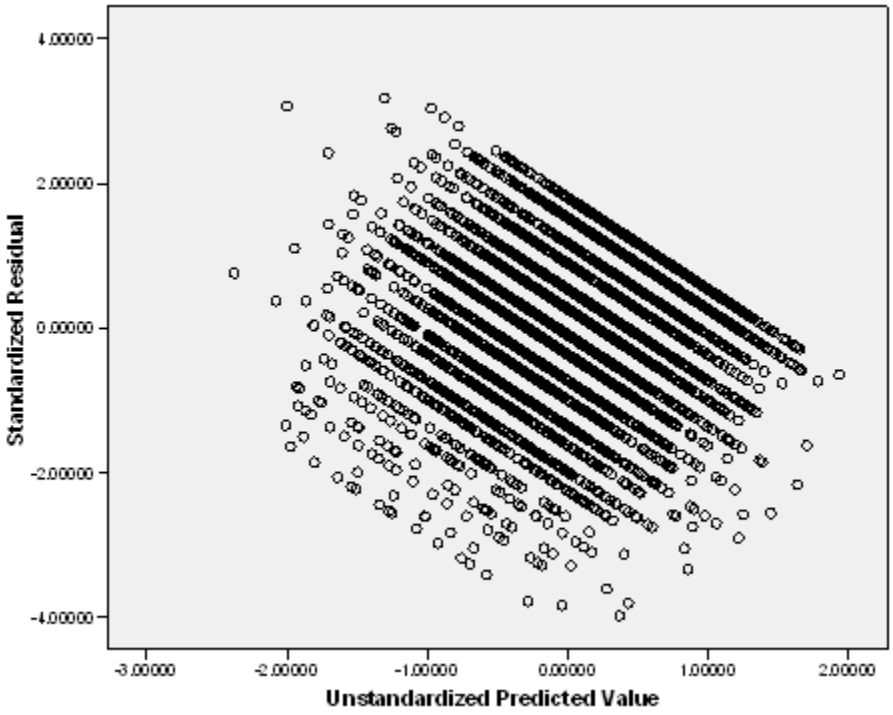

Figure 4. Residuals scatterplot for seniors' gains in general education.

The scatterplots for both first-years and seniors appear to satisfy regression assumptions. The residuals are clustered close to zero, indicating generally normal distributions. Though there appears to be less variability in the residuals at higher predicted values, homoscedasticity also seems to hold reasonably well. Finally, the errors appear to be fairly independent, with no discernible pattern besides an apparent upper limit on residual size at higher values of Y'. The assumptions of regression seem to be met for this model. Because these plots are similar for other regressions addressing this question, they will not be reviewed for the analysis of practical competence and personal and social development.

Co-curricular engagement and gains in general education

Of all the analyses performed in this study, the relationships between co-curricular engagement and writing and speaking gains are the weakest. This is not a surprise, inasmuch as there is no reason to believe that many extracurricular activities, especially recreational sports which dominated the participation patterns, would contribute to gains in these areas.

Table 14 lists the regression coefficients for first-year and senior students. The two major control variables, environmental perceptions and curricular engagement, are included for reference.

Table 14

Summary of regression analysis for general education gain (FY N=3495, SR N=3151)

	First-year		Senior	
Variable	β	SE β	β	SE β
Intensity	.003	.013	.009	.015
Total co-curricular hours	-.012	.017	-.060**	.017
Number of activities	.014	.016	.001	.017
Environmental perception	.396***	.015	.370***	.016
Curricular engagement	.309***	.017	.342***	.016

Note: FY R^2 = .37, SR R^2 = .36
**p<.01.
***p < .001.

Almost all of the variables measuring intensity and extensity of co-curricular engagement have trivial effects on general education gains. The exception is total co-curricular hours for seniors, which exhibits a suppressing effect on the general education gain measure. This indicates that involvement with too many activities may have some negative impact in this area. Of course, this model controls for other variables; total co-

curricular hours and general education gain exhibit a positive zero-order correlation (Table 13).

The respective amount of variance explained in the first-year and senior models is about 37% and 36%, indicating that the model appears to account for a good portion of general education gains but leaves much of the variance undetermined.

Co-curricular engagement and gains in practical competence

In this study, practical competence is defined as acquiring job-related skills, working effectively with others, and problem-solving. Again, there are few significant indications that co-curricular engagement has an effect on these skills, though there are some results worth noting. Table 15 lists the regression results.

Table 15

Summary of regression analysis for practical competence gain (FY N=3495, SR N=3151)

	First-year		Senior	
Variable	β	SE β	β	SE β
Intensity	.014	.013	.018	.013
Total co-curricular hours	.002	.016	.002	.016
Number of activities	.007	.015	-.083***	.016
Environmental perception	.471***	.015	.458***	.014
Curricular engagement	.282***	.016	.294***	.014

Note: FY R^2 = .47, SR R^2 = .46
***p < .001.

Intensity, or the amount of effort that students devote to co-curricular pursuits, has a positive but trivial effect on practical competence for both first-year and senior students. In other words, deeper investment in these activities may translate into very small gains in this area. This effect is significantly more pronounced for full-time students than for part-time students; this is the only student characteristic for which there

is a significant difference. While the number of hours students spend on co-curricular activities has a negligible effect, the number of activities suppresses practical competence gain for seniors. Again, all of these relationships occur while controlling for many other variables in the model. Even as such, however, it could be that devoting too much time to many activities can distract from developing practical skills. That is, students investing more deeply in co-curricular opportunities must do so with fewer activities because their time and effort are finite (Pace, 1979, 1980).

As with all models in this study, the institutional and educational environment and students' level of curricular engagement both have highly positive relationships with gains in practical competence. These models explain 47% of the variance in first-year gains and 44% of the variance for senior gains in practical competence, an appreciably high R square.

Co-curricular engagement and gains in personal and social development

The scale that describes personal and social development in this study includes items addressing a wide range of student experiences, described generally as understanding and consideration of self and others of diverse backgrounds as well as level of commitment to community ideals. The results of the regression analyses for this gain scale are more pronounced than those for the other two scales (Table 16).

Table 16

Summary of regression analysis for personal and social development gain (FY N=3495, SR N=3151)

	First-year		Senior	
Variable	β	SE β	β	SE β
Intensity	.049**	.013	.046*	.015
Total co-curricular hours	-.022	.016	.011	.017
Number of activities	.108***	.015	.062***	.017
Environmental perception	.504***	.015	.516***	.016
Curricular engagement	.195***	.016	.171***	.015

Note: FY R^2 = .44, SR R^2 = .41
*p < .05.
**p < .01.
***p < .001.

As with the other two scales, the control variables of environmental perceptions and curricular engagement have strong relationships with personal and social development. That is, the more students see the institutional environment as being supportive and faculty as accessible, the larger the positive effect on their gains in all three of the scales in this study. Likewise, the more that students report writing and preparing for class, as described in the curricular engagement scale, the greater their gains in personal and social development tend to be.

The depth of student involvement, as measured by the intensity scale in this study, appears to have some significant bearing on student gains. Both first-year students and, to a slightly lesser extent, seniors benefit modestly in terms of personal and social development from the amount of effort they invest in co-curricular experiences.

Though the coefficients for total co-curricular hours has only a trivial effect, the negative relationship for first-year students contrasts with the positive one for seniors. When controlling for a host of factors, it appears that first-year students spend too many

hours outside of class in such activities, reflect less on those experiences, and thus benefit less in the areas represented by this scale.

The number of activities in which students are involved, however, is significantly and positively related to personal and social development in both student groups. The number of activities is described in this study as involvement in different types of co-curriculars (e.g. athletics, government, publications, etc.), so exposure to more diverse activities appears to contribute to a better understanding of self and others both early and late in the student experience.

The variance explained by this model is 44% for first-year students and 41% for seniors. The drop in R squared between this model and the previous one is attributable to the appreciably lower regression coefficients for curricular engagement in both student groups.

3) **How does co-curricular involvement moderate the effect of curricular engagement on student educational gains? In other words, does co-curricular involvement enhance or detract from the effect of curricular engagement?**

To address this question, additional variables were created to illustrate the interaction between curricular engagement and each of the co-curricular engagement terms: intensity (or depth of co-curricular experience), weekly co-curricular hours and number of activities in which the student reported some level of involvement. Each of these new terms is indicative of the concurrent effect of curricular engagement and aspects of co-curricular engagement. The correlations between these terms are listed in Table 18.

The correlations for variables also addressing question two are identical to those reported in Table 13. Similar to what is reported there, correlations for the interaction terms are only moderately significant; as a result, these variables do not appear to create a multicollinearity threat to the regression analysis. Further, the assumptions of regression analysis – normality, homoscedasticity and independence of errors – are satisfied in this case because scatterplots are identical to those depicted in Figures 3 and 4. It should also be noted that R square did not change appreciably with introduction of interaction terms for any model; in most cases it increased by .001 but in some it did not change at all.

Interaction between co- and curricular engagement for gains in general education

The interactions between curricular engagement and the measures for co-curricular engagement in this study had little effect on gains in general education. Table 17 lists the coefficients and their respective significances.

Table 17

Summary of regression analysis (including interactions) for general education gain (FY N=3495, SR N=3151)

	First-year		Senior	
Variable	β	SE β	β	SE β
Intensity	.001	.101	.010	.107
Total co-curricular hours	-.012	.113	-.059**	.113
Number of activities	.014	.120	.005	.123
Environmental perception	.396***	.015	.370***	.016
Curricular engagement	.309***	.041	.330***	.041
Interaction between curricular engagement and intensity	.010	.108	.020	.110
Interaction between curricular engagement and total hours	.003	.118	.007	.114
Interaction between curricular engagement and number of activities	.004	.131	.001	.128

Note: FY R^2 = .37, SR R^2 = .36
**p < .01.
***p < .001.

Table 18: Correlations among variables (interaction terms included)

Variable	Intensity	Number of activities	Total co-curricular hours	Curricular engagement	Environmental perception	Gain in general education	Gain in practical competence	Gain in personal and social development	Interaction: Curricular engagement and number of activities	Interaction: Curricular engagement and weekly co-curricular hours
Number of activities	.231 **									
Total co-curricular hours	.238 **	.427 **								
Curricular engagement	.183 **	.179 **	.087 **							
Environmental perception	.112 **	.139 **	.054 **	.465 **						
Gain in general education	.108 **	.110 **	.037 **	.500 **	.533 **					
Gain in practical competence	.116 **	.082 **	.025	.492 **	.595 **	.678 **				
Gain in personal and social development	.157 **	.193 **	.078 **	.443 **	.612 **	.572 **	.609 **			
Interaction: Curricular engagement and number of activities	.062 **	.113 **	.092 **	-.038 **	-.019	-.030 *	-.025	-.004		
Interaction: Curricular engagement and weekly co-curricular hours	.065 **	.087 **	.099 **	.052 **	.048 **	.028 *	.031 *	.039 **	.426 **	
Interaction: Curricular engagement and co-curricular intensity	.103 **	.061 **	.068 **	.057 **	.038 **	.034 *	.010	.016	.241 **	.205 **

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Listwise N=5058.

Since the pattern is largely unaltered for variables discussed in question two, the statistics of primary importance are the interaction terms' regression coefficients. There appears to be little moderating effect between curricular engagement and elements of co-curricular engagement on general education gains. The only coefficient that even approaches significance is the interaction between intensity (or depth of co-curricular effort) and curricular engagement for seniors. As seniors become more academically engaged, then, the intensity of co-curricular engagement has less of an effect on gains in general education.

Interaction between co- and curricular engagement for gains in practical competence

Similar to the previous model, the only results in this regression that approach significance indicate negative relationships. These coefficients are listed in Table 19.

As students become more engaged in curricular pursuits, the depth of their co-curricular engagement has less of an effect on practical competence. Interestingly, a positive relationship exists between the curricular engagement/number of activities term and practical competence for first-year students, indicating that there may be some practical benefit to engaging with coursework and becoming involved with multiple co-curricular activities.

Table 19

Summary of regression analysis (including interactions) for practical competence gain (FY N=3495, SR N=3151)

	First-year		Senior	
Variable	β	SE β	β	SE β
Intensity	.017	.097	.018	.097
Total co-curricular hours	.002	.108	.003	.103
Number of activities	.006	.116	-.079***	.112
Environmental perception	.472***	.015	.457***	.014
Curricular engagement	.285***	.039	.293***	.037
Interaction between curricular engagement and intensity	-.034*	.104	.010	.100
Interaction between curricular engagement and total hours	.005	.113	.004	.104
Interaction between curricular engagement and number of activities	.024	.125	-.021	.116

Note: FY R^2 = .43, SR R^2 = .44
*p < .05.
***p < .001.

Interaction between co- and curricular engagement for gains in personal and social development

The interactions of co-curricular and curricular engagement are negatively related to gains in personal and social development. Though most coefficients in this model exhibit trivial significance, they all serve as further evidence that in- and out-of-class engagement levels do not complement each other. Table 20 lists the coefficients and their significances.

As with the two previous models, the interaction between intensity and curricular engagement was negatively related to gains in personal and social development, especially for seniors. Apparently, students who get more deeply involved with their co-

curricular activities while also immersing themselves in their studies benefit less in this area than students who engage more in one or the other. This may be due to limits on students' time and effort (Pace, 1979, 1980), indicating that students do not have the resources to sufficiently reflect on their experiences if they spend all their time studying and investing in co-curricular endeavors.

In contrast, the interaction term including number of co-curricular activities, while of almost no consequence for seniors, is positive and approaches significance for first-year students. When these students are engaged with the curricular aspects of their college experience, they tend to gain more in personal and social development as a result of involvement with multiple activities than first-years who do less in either area.

Table 20

Summary of regression analysis (including interactions) for personal and social development gain (FY N=3151, SR N=3495)

	First-year		Senior	
Variable	β	SE β	β	SE β
Intensity	.049**	.096	.047**	.105
Total co-curricular hours	-.023	.107	.011	.112
Number of activities	.107***	.115	.064***	.121
Environmental perception	.504***	.015	.515***	.016
Curricular engagement	.196***	.039	.171***	.041
Interaction between curricular engagement and intensity	-.012	.103	-.039*	.108
Interaction between curricular engagement and total hours	.007	.112	-.015	.113
Interaction between curricular engagement and number of activities	-.018	.125	.001	.126

Note: FY R^2 = .41, SR R^2 = .41
*p < .05.
**p < .01.
***p < .001.

Summary

Very few students engage in more than five co-curricular activities. On average, students spend no more than nine hours a week on any one activity, and often much less than that. As expected due to their greater experience with these organizations, seniors reported higher scores on the co-curricular intensity scale than first-year students. As such, seniors engaged in more leadership activities than first-year students.

The effects of co-curricular engagement on gains in general education, practical competence and personal and social development were largely trivial, though more significance emerged in the model examining personal and social development. The models exhibited only modest R squared values, explaining between 38% and 47% of the variance for each gain scale.

Interactions between curricular and co-curricular engagement had mixed relationships with the gains scales. For the most part, students who were more involved with curricular pursuits enjoyed smaller gains as a result of intense co-curricular engagement while the same students enjoyed greater gains as a result of the number of activities they participated in.

In the next chapter, the implications of these findings for policy, practice and research will be discussed.

Chapter 5: Conclusions and Implications

This chapter opens with a summary of the purpose, rationale, methods and results of the study. It then presents three conclusions based on the findings about the relationships between co-curricular and curricular engagement and gains in general education, practical competence, and personal and social development. The chapter closes with implications for both research and practice.

Summary of the Study

The intended outcomes of college include much more than attainment of an academic degree. While factual knowledge is essential to the educational experience, students are expected to emerge from college with heightened ethical awareness and a better understanding of their role within the larger community than when they entered (e.g. Association of American Colleges and Universities, 2007). Attending college should change students in desirable ways and student involvement with activities outside the classroom can make important contributions to these outcomes (Berger & Milem, 1999; Kuh, 1993; Pace, 1979; Pascarella & Terenzini, 2005; Terenzini et al., 1996).

The co-curriculum is comprised of many kinds of activities, ranging from student government to athletics to academic clubs to residence life. Involvement in such endeavors can be measured in terms of both breadth (number of activities and hours spent on them per week) as well as depth (the effort that students put into these activities) and has positive effects in many areas. For example, co-curricular engagement has a positive effect on writing and speaking (Terenzini et al., 1996; Whitt, Edison, Pascarella, Terenzini, & Nora, 2001), career preparation and leadership skills (Cress et al., 2001; Foubert & Grainger, 2006), and self-awareness and community mindedness (Cooper et

al., 1994; Flowers, 2002; Zúñiga et al., 2005). These three outcomes are the focus of this study, defined as gains in general education, practical competence, and personal and social development.

Of course, the academic program is central to any college education, and it also affects these important student outcomes. There is ample evidence that time spent reading and writing enhances those skills (e.g. Johnstone et al., 2002). Time and effort spent on coursework also translates into post-college performance as evidenced by success in one's chosen field (Bretz Jr., 1989). Curricular engagement contributes to personal and social development as well; by teaching students how to take responsibility for their own academic performance, faculty facilitate self-efficacy outside the classroom (Cruce et al., 2006; Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996; Weiner, 1985).

Purpose and Value of the Study

The purpose of this study was to determine the relationships between co-curricular engagement and three important outcomes of the college experience. Co-curricular engagement was defined in terms of extensity, or number of activities and amount of time spent on them, and intensity, or depth of effort with those activities. The selected outcomes were considered representative of the broad benefits of college. To review, three research questions guided this study.

1) What are the patterns of student co-curricular engagement, as illustrated by number of activities, types of activities, and intensity of involvement with those activities?

2) What are the unique effects of co-curricular engagement on student self-reported gains when controlling for effects of curricular experience and the institutional and educational environment?
3) How does co-curricular engagement moderate the effects of curricular engagement and environment on student educational gains? In other words, does co-curricular engagement enhance or detract from the effects of curricular engagement and perceptions of campus environment?

This study is important because it adds to the existing knowledge about how students spend their time outside of the classroom and the potential benefits of those activities independent of the academic program. No studies to this point have taken both extensity and intensity of co-curricular engagement into account while controlling for academic habits and the institutional environment to understand how out-of-class learning benefits students. The findings can be used by student affairs professionals and faculty members to improve the undergraduate experience and suggest programmatic efforts that could enhance student learning and personal development through participation in out-of-class activities.

Data and Methods

This study used data gathered during the 2006 administration of the National Survey of Student Engagement (NSSE) (Kuh, 2003a; Kuh et al., 2001), which included a supplementary set of items about co-curricular engagement that were administered to 33 of the 523 institutions involved in the project that year. Of the 48,893 students who received this supplementary set with their NSSE administration, 7,817 completed both the core survey and the co-curricular items. While NSSE inquires about many facets of

the college experience in terms of how students spend their time and their impressions of support and services received, this extra item set elicited information about specific co-curricular activities and the time and effort students put into them.

To answer the first research question, means and frequencies of student involvement levels in different activities, including measures of both extensity (breadth) and intensity (depth) of engagement, were calculated to determine the patterns of student involvement in co-curricular pursuits.

The second and third research questions required multiple regression analysis to examine relationships between extensity and intensity of co-curricular engagement and the three gains scales of interest: general education, practical competence and personal and social development. The models for the second question involved only these constructs as well as curricular engagement and the institutional and educational environment as control variables. For the third question, interaction terms were introduced to account for the moderating influence of curricular engagement and number of activities, hours spent on them, and co-curricular intensity on each of the gains scales. The models for this last question emphasized these interaction terms since their introduction did not have an appreciable effect on other, previously examined relationships within the model. All models included variables to check for conditional effects based on student race, gender, first-generation status and full- or part-time enrollment.

Results

Students take part in an average of about two co-curricular activities in a given academic year, with very few students participating in more than five. Athletics and

recreational sports draw about half of all involved students, while a third participate in religious organizations and a quarter take part in service initiatives and performing or visual arts groups. Certain activities, like fraternities and student government, attracted fewer students by virtue of their limited number of positions or exclusive membership requirements. American Indian, Asian and Pacific Islander, African American and Latino students all participated in service activities at a higher rate than the rest of the sample.

As expected, senior students exhibited deeper investment in these activities (defined as higher levels of intensity in this study) than first-year students. Though the same proportion of each class participated in regular meetings, practices, or rehearsals, about 12% more seniors reported taking on specific projects or changing policy for an organization. The most visible difference between seniors and first-year students was in assuming leadership positions; more than two fifths (43%) of seniors reported having some kind of formal leadership position, contrasted with only one quarter of first-years.

Some aspects of co-curricular engagement were positively related to student gains while others were negatively related. Because co-curricular endeavors do not typically emphasize writing and academic speaking skills, it is not surprising that the more hours students spent on co-curricular activities, the less progress they reported in general education, especially seniors.

While co-curricular involvements would seem to affect skills in working with others and address the kinds of challenges presented in the post-college workplace, the results of this study hint only faintly that this is the case. The relationship between co-curricular intensity and practical competence is positive, but not statistically significant.

Conversely, being involved in too many activities appears to have a negative effect on gains in this area, significantly so for senior students.

The number of out-of-class activities in which students engaged was significantly correlated with gains in personal and social development for both first-year and senior students. Depth of involvement in co-curricular activities also exhibited a significant positive relationship with this gain.

The regression results addressing the third research question, which inquired about the interactions between curricular engagement and aspects of co-curricular engagement, did not produce noteworthy findings. Although the interaction coefficients did not often achieve significance, however, they did indicate a pattern of mostly trivial, negative coefficients across all three gains for seniors. The curricular engagement interactions with intensity exhibited a significant negative relationship with general education and personal and social development gains for seniors; that is, the more engaged with coursework-related activities students were, the less they benefited from depth of involvement with co-curricular pursuits. For first-year students, curricular engagement attenuated any positive relationship between co-curricular intensity and practical competence gains.

Both curricular engagement and the institutional and educational environment were significantly related to the dependent variables and explained a modest amount of variance for each gain scale, with R squares ranging from 38% to 47%. All of these effects were similar for students of varying backgrounds; race, first-generation status, student age, and gender all had little effect on any of these gains.

Conclusions

The results of this study point to three conclusions.

1) *The majority of students who participate in co-curricular activities do so at modest levels of extensity and intensity.* At many colleges, student affairs staff and others commonly urge new students to "get involved" in some educationally purposeful co-curricular activity, in part to avoid having too much free time which can devolve into boredom and risky behavior, possibly resulting in student departure. Most students, however, participate in one or two activities at a time. Though some do report spending extreme numbers of hours every week on these activities, the mean is 10.7 total hours. Students spend between 2.7 and 8.2 hours per week on any single activity.

Many students take part in regular meetings or other routine events. As the intensity of the involvement increases – progressively defined in this study as managing projects, taking on leadership positions, and influencing policy or direction of an organization – fewer students report doing that activity. While responses to some of these items may reflect a limited number of opportunities available (Barker, 1968; Walsh et al., 1992), any student can exert influence on an organization's direction. That relatively few students reported any involvement in this activity (24% of first-years, 36% of seniors) indicates some lack of investment among students who take part in co-curricular activities. Students may be unaware of their own ability shape their co-curricular experiences beyond simple participation, or they may be uninterested in doing so.

In either case, students may believe that their peers in visible leadership positions are alone responsible for the function or growth of a co-curricular activity. It is possible, for example, that a first-year student might be particularly interested in rejuvenating a

moribund political science club and helps the upperclass president recruit new members. Regardless of the energy he invests or changes that might be made in response to his efforts, he may perceive the president as having all the power, and thereby fail to report his own intensity-related behavior on items such as those investigated here. Traditional student views on leadership would support this explanation of the intensity data reported in this study (Roberts, 2007; Roberts & Huffman, 2005; Rogers, 2003; Rost, 1993).

The findings of this study are consistent with the fact that student resources are finite in terms of time and energy. Students have many demands placed on their time, and the sample in this study may simply indicate how few students have time left over for deep involvement with co-curricular activities.

2) *The benefits of co-curricular engagement are mixed and limited*.

Co-curricular engagement generally has only modest unique effects on the self-reported gains examined in this study. Though perhaps these activities cannot be expected to influence gains in general education to any appreciable degree, which is measured here with writing and speaking, co-curricular activities are assumed to be integral to career preparation as well as personal development, which are measured by the other two self-reported scales in this study. The co-curricular effect on these gains is limited to certain aspects of students' experiences with out-of-class activities.

In terms of general education, it appears that as the number of hours spent per week on co-curricular activities increases, writing and speaking gains benefit less. Though this relationship was significant only for seniors, it was also negative, though not statistically significant, for first-year students. Because time is a finite resource (Pace, 1979, 1980), students may not have enough of it to be extensively involved outside of the

classroom as well as properly attend to the course requirements that more directly develop these skills.

At the same time, we might expect that the co-curriculum would enhance problem solving and working effectively with others, two skills that contribute to the practical competence scale. Most of the relationships between co-curricular engagement and practical competence are trivial, however. The exception is a significant negative relationship between number of activities and practical competence for seniors.

Quantitative problem-solving and computing technology use, which contribute to practical competence, certainly might not be affected by singing in a choir or participating in intramurals. A case could be made, however, for how these activities contribute to students' performance in post-graduation jobs. Both of these activities require collaboration between participants in order to produce a desirable result; music ensembles are made up of many parts that contribute to a final artistic product and intramurals are often team endeavors. The strategies that students use to work together in these environments translate well into team-oriented work scenarios. Because these data are self-reported, it falls to students to recognize those parallels, and they may not reflect on these experiences deeply enough to do so. As another example, when a student submits a story for the school newspaper, he may not perceive how he has improved his communication or problem-solving skills in the process of writing it or negotiating terms with his editor.

The research suggests that gains in personal and social development are related to co-curricular engagement (Kuh, 1995; National Association of Student Personnel Administrators & American College Personnel Association, 2004), and this study does,

indeed, support that understanding to some degree. The number of activities in which students participated exhibited a significant positive relationship with personal and social development gain for both first year students and seniors. The breadth of experience linked to participation in several activities may provide exposure to diverse populations and ideas, contributing to the various self-awareness and other-conscious items that make up this gain scale. For example, a student involved in a service society, a student government committee and Fellowship of Christian Athletes might likely be presented with opportunities to reflect on the importance of service, civic engagement in terms of governance, and aspects of her own spirituality all through her co-curricular activities. Again, whether she knows or chooses to engage in that reflection is a different question.

Co-curricular intensity has significant positive relationships only with personal and social development, for both first year and senior students. Though seniors participate in more intense behaviors, as defined by this study, at higher rates than first year students, both groups enjoy the benefits of taking on roles involving more responsibility and generally investing more heavily in co-curricular opportunities. This depth of co-curricular engagement may contribute to personal and social development by way of student groups; in navigating leadership challenges within their organizations or other activities, students must learn to consider the needs of others and the impact their decisions will have on the group and its environment. This kind of reflection broadens the student perspective and would be evidenced through items in the developmental gains scale.

Given the preponderance of evidence that student characteristics affect the kinds of relationships examined in this study (Pascarella & Terenzini, 2005), it is surprising

that very few significant conditional effects resulted from these analyses. Because these effects have been found across many studies using various methodologies and data sets, it seems unlikely that the present research has demonstrated their absence in terms of co-curricular engagement. Rather, and perhaps due to their experimental and untested nature, the items used in this study may not have measured the concepts of extensity and intensity precisely enough to provide results that fully illustrated these conditional interaction effects.

Curricular engagement has mixed effects. Despite student affairs staff members' inclination to promote involvement in all its forms, the findings of this study indicate that there are limits to its benefits. These will be discussed later in terms of implications for practice.

3) *Students who exhibit high levels of engagement in academic activities enjoy less benefit from co-curricular engagement in some areas.* Without exception, the curricular engagement scale demonstrated highly significant positive relationships with all gains in this study. These relationships were strongest with gains in general education and weakest for personal and social development. The three interaction terms, expressed as numerical products of curricular engagement measures and co-curricular number of activities, hours per week, and intensity, showed largely nonsignificant coefficients. Many of the interaction coefficients, including both that achieved significance, were negative. This suggests that the effect of co-curricular engagement decreases slightly with increased curricular engagement.

All but one of the interaction term coefficients for seniors were negative, while results were mixed for first-year students. As students immerse themselves in reading,

writing, and other course preparations, they likely have less time to productively engage in different dimensions of the co-curriculum. Perhaps for this reason, general education gains may be attenuated as both kinds of engagement increase. Though students report spending a fair amount of time on coursework, they may have trouble adequately applying lessons learned in the classroom if they have considerable obligations outside of it. Co-curricular engagement has a negligible effect on this gain, so it may become a distraction for students who are also making serious efforts in their coursework.

Interaction effects for practical competence gains were more mixed, but still mostly negative. First-year students' co-curricular intensity-related gains in this area suffered in cases of high levels of curricular engagement. As students take on more responsibility with their activities, they have less time to devote to their studies. Taken alone, intensity had a small positive effect on this gain, so these greater responsibilities perhaps do not complement coursework well in terms of developing critical thinking, quantitative and technological skills, and working well with others. Because intensity is not necessarily time-dependent, this may not be an issue of finite resources but instead different lessons learned in and out of class, the combination of which does not affect gains in practical competence.

The intensity interaction terms, mostly trivial in magnitude, were negative for personal and social development, significantly so for seniors. Similar to the same phenomenon in the practical competence scale, perhaps this is due to students becoming distracted as they switch gears between highly academic activities like writing, reading and working to meet instructors' expectations and planning events or balancing checkbooks for student organizations. Though a student may be highly engaged in

coursework for a major in English and do an excellent job chairing a student government subcommittee, doing both may give her little opportunity to reflect on important aspects of either that might contribute to her personal and social development. Simply meeting expectations, however high, may be all she can manage.

Implications for Research

These conclusions suggest directions for future research to extend our understanding about how co-curricular engagement acts within the total educational context to affect student gains.

1) *We need to better understand how students transfer lessons from in-class to out-of-class experiences and vice versa*. The negative coefficients accompanying the interaction terms are puzzling in light of the fact that curricular engagement has a strong positive effect in all models, and many dimensions of co-curricular engagement also appear to be complementary to gains. Student time and effort are finite and may in part explain these seemingly contradictory findings. Because best practices in liberal education call for a seamless learning environment, it is important that we better understand how students make meaning of the important lessons to be learned from different aspects of their experiences. Data sources for research like this might include testimony from students in influential roles, like tutors, resident assistants, and other peer mentors (see Kuh, 1993, 1995). Further, institutions may have formal methods of tracking co-curricular experiences (Bringle & Hatcher, 1996). The methods used to build these transcripts, which may incorporate deliberate reflection assisted by faculty mentors or some kind of capstone experience, can provide valuable insight as to how students draw connections between their in- and out-of-class experiences.

The curricular engagement scale in this study is comprised of many items that detail correlated and complementary academic practices. Its effect in each regression model never failed to achieve significance, and its beta weights were always considerable. Given the number of dimensions wrapped up in this scale, it would be helpful to "unpack" its elements in future research in order to better pinpoint their discrete relationships with the student gains in this study. Such an approach would better inform analyses like the ones suggested above.

The National Survey of Student Engagement does not capture all elements of suggested liberal education learning outcomes (Association of American Colleges and Universities, 2007). In examining how students transfer lessons between co- and curricular experiences to inform learning outcomes, a more comprehensive instrument – or constellation of indicators – should be employed. For example, regarding personal and social development, NSSE includes several items associated with this gain but does not explore these concepts deeply. Nor is it meant to. But a passing reference to a "personal code of values and ethics" (2006c, p. 3) is inadequate for assessing a key learning outcome according to AACU: "Personal and social responsibility, including ethical reasoning and action" (2007, p. 3). More focused assessments that can be triangulated with general survey results would help address learning outcomes more completely.

2) *The value of different dimensions of deep co-curricular involvement should be examined in greater detail.* The items used to explore intensity in this study emphasized organizational involvement, but many enriching co-curricular experiences may not involve formal associations or clubs. Though time on task is an important indicator of student engagement (Kuh, 2003a), how students spend that time appears to be significant

as well. For example, if a student participating in intramurals spends time practicing on his own or perfecting his technique, he may be committed to excellence in that pursuit and could serve as an example to others participating on his team. There are important developmental dynamics involved in this kind of behavior that were not captured in this study. These include individual motivation (Weiner, 1985), ethical development, and personal leadership outside of the organizational context (Andersen, 2000; Dugan, 2006b; Roberts, 2007; Rogers, 2003). Additional investigations into these phenomena are important for better understanding different facets of co-curricular intensity and how they might affect the gains discussed in this study.

New items that could assist in better exploring these important co-curricular aspects might include some that expand on the question of leadership. Though the intensity scale here hints at some facets of leadership theory, there is no way to intuit how co-curricular engagement affects students' relationships and collective goal attainment. In a social change model (Higher Education Research Institute, 1996), for example, leadership is a complex process of understanding one's peers and establishing relationships in service of a shared vision. This model is representative of modern student leadership theory and is known to contribute to students' social development and worldviews (Dugan, 2006a). As such, the experimental item set in this study could be expanded to include an examination of how students relate to their peers and decide on courses of action. As this kind of leadership need not take place in a formal organizational structure, the items would have to be explicit in allowing for many contexts. There is some groundwork in this area that could prove valuable (see Dugan,

2006a; Tyree, 1998), and would be useful absent the restrictions our own team had when constructing the item set in this study.

3) *We need to better understand how students perceive and take advantage of opportunities to engage in educationally purposeful activities and benefit from that involvement.* Some students do not believe they have the time or energy to engage with activities outside of class (Jones & Hill, 2003; Kuh, Gonyea, & Palmer, 2003), but others may be in a position to get involved and bypass the opportunity because it does not appear to be of immediate benefit. A high proportion of students reported engaging at relatively low levels in this study; many beyond them reported no involvement at all. Beyond circumstances preventing their participation, such as work or family, why would students avoid these activities? Further research could help illuminate student understandings of important educational outcomes and how they believe those outcomes are or are not achieved through the co-curriculum.

Student affairs professionals encourage co-curricular involvement in order to maximize student's opportunities for development and enriching educational experiences. Many professionals may be surprised by the results of this study, which point to limits on the benefits of co-curricular engagement and important interactions between this and curricular engagement. Replicating and expanding on this research could help to better inform the profession about the effects of "student involvement." With better context, these professionals can advise students more carefully about which opportunities might be most satisfying and beneficial.

4) *The conditional effects of the extensity and intensity of co-curricular engagement should be confirmed.* Because conditional effects were to be expected based

on prior research and few were found, it is unclear whether the students in this study differ significantly from those in earlier ones or if the survey items used to evaluate their experiences were imprecise. This mystery merits further investigation to determine if co-curricular engagement benefits students of different backgrounds in different ways.

Implications for Practice

The findings of this study have implications for student affairs practitioners and faculty about how they can use the co-curriculum and coursework to enhance the essential learning outcomes articulated by the AAC&U (2007).

1) *Institutions must intentionally create opportunities for students to systematically reflect in multiple, meaningful ways on their co-curricular experiences.* Engaging in almost any school-sponsored activity outside of class may well have some benefit in terms of the gains discussed in this study. While some such as service learning are known to be beneficial (Bringle & Hatcher, 1996; Vogelgesang & Astin, 2000), others such as intramurals may require students to reflect more intentionally on the benefits they derive from participating in such activities.

This deeper reflection might be accomplished in a number of ways. First, in the case of formal student organizations, student affairs staff can intentionally train club advisors to better recognize the developmental value of their groups' activities and become involved in actively supporting members' understanding of that value. This need not be manifested as formal debriefing after every ultimate Frisbee practice. Instead, advisors can attend meetings, practices or rehearsals and cultivate relationships with members instead of merely signing forms when called on. These relationships between

advisors and students would be based on substantive aspects of the organizational experience and could result in better, deeper reflection on the part of members.

Another strategy for encouraging more meaningful student understanding of co-curricular experiences' value is to create a better awareness of important outcomes across the institutional culture. If elements of these outcomes were present in the institution's mission statement, for example, a campaign to incorporate that statement meaningfully into important aspects of the student experience would highlight the importance of different kinds of development. The consistent message that general education, practical competence, and personal and social development are priorities for the institution could stimulate student reflection on how they access tools to effect those gains.

2) *Student affairs staff and faculty are encouraged – once again – to address the total student experience, understanding how their efforts affect it and collaborating to enable more meaningful student reflection.* This recommendation is well-established; seminal work in student affairs has consistently indicated the importance of attending to all aspects of student education and development (American College Personnel Association, 1994; National Association of Student Personnel Administrators & American College Personnel Association, 2004). They should establish a shared understanding of gains such as those examined in this study and discuss how they can complement each other's efforts to promote the importance of those gains. Understanding the way that these types of engagement interact and promoting appropriate levels of co-curricular engagement while enabling sufficient curricular effort is also important.

They should understand not only their own roles but each other's as well, so that they can focus their efforts advising students most effectively as to productive activities

and pursuits. Getting a consistent message out to students about values that the community prioritizes is key to encouraging student reflections on those values. By understanding how their respective efforts contribute to educational gains as well as knowing what other resources are available to students, each constituency can help ensure that students avoid obscuring benefits in one area with too much or the wrong kind of effort in another.

Because curricular and co-curricular engagement may not necessarily be complementary, staff and faculty should also recognize student limits whenever possible and try to avoid taxing them beyond those limits. While this suggestion may play into countless stereotypes of students who are too busy to do their homework, the opposite is also true. Students who take on co-curricular roles of responsibility are commonly known to accept additional duties with insufficient consideration for their own capacities for coursework and otherwise. Student affairs staff and other advisors should carefully counsel students who are in these positions, encouraging them to share responsibilities. This lightens the student's load while providing additional developmental opportunities for other students. Conversely, faculty should be attuned to students' learning styles and be ready to adjust their own course deliveries if certain strategies seem to encourage student effort more effectively.

While institutional missions almost certainly reference intellectual development and the importance of academics, any additional developmental component to the mission is likely to require serious effort on the part of student affairs staff. This effort might be difficult to coordinate at institutions with inexperienced or younger members of this staff, because they may be less attuned to the deeper work required to encourage

developmental change. In order to affirm the current student generation's social expectations, young professionals may have recently become more friendly advocates than serious resources for students (Lowery, 2004). A balance is required in student affairs work that accounts for generational variables among students but retains legitimate connections to developmental work. Rather than happily encouraging students to dive into as many activities as will fit on their resumés, for example, student affairs staff should assist them in selecting and maximizing valuable experiences and opportunities that complement the academic and total mission of the institution. This approach would lend itself more readily to meaningful collaboration between student affairs and faculty in achieving the goals outlined here.

Faculty and student affairs staff have different roles to play and different expertise to enhance aspects of the college environment that affect student learning; in their respective ways, each can contribute to an enriched learning environment and challenge students to devote more effort so that they learn more and develop in the desired ways. If both groups tend to these issues, students may enjoy greater synergistic benefits between curricular and co-curricular engagement.

Final Word

Higher education is expected to contribute to society by educating well-rounded and community-minded graduates (Association of American Colleges and Universities, 2007). This goal can be achieved through the benefits of experience both in and out of the classroom; though the formal curriculum allows for some level of institutional control, the co-curriculum is largely student-defined and may articulate with coursework to augment student gains or, alternatively, distract from the lessons learned in class. This

study has demonstrated that some aspects of co-curricular engagement can complement students' academic pursuits, but the two can also interact to produce potentially counterproductive results. By creating more deliberate opportunities for students to reflect on their in- and out-of-class experiences as both contributing to the same developmental goals, institutions may be able to improve their learning environments and better prepare students to meet their responsibilities to society upon graduation.

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Appendix A: Chickering and Reisser's

Seven Principles for Good Practice in Undergraduate Education

Good practice in undergraduate education:

1. encourages contact between students and faculty,
2. develops reciprocity and cooperation among students,
3. encourages active learning,
4. gives prompt feedback,
5. emphasizes time on task,
6. communicates high expectations, and
7. respects diverse talents and ways of learning

Appendix B:

Chickering and Reisser's Seven Vectors of Identity Development

1. Developing competence
2. Managing emotions
3. Moving through autonomy toward interdependence
4. Developing mature interpersonal relationships
5. Establishing identity
6. Developing purpose
7. Developing integrity

Appendix C:

National Survey of Student Engagement

National Survey of Student Engagement 2006

The College Student Report

1 **In your experience at your institution during the current school year, about how often have you done each of the following? Mark your answers in the boxes. Examples: ☒ or ■**

	Very often	Often	Some-times	Never
a. Asked questions in class or contributed to class discussions	☐	☐	☐	☐
b. Made a class presentation	☐	☐	☐	☐
c. Prepared two or more drafts of a paper or assignment before turning it in	☐	☐	☐	☐
d. Worked on a paper or project that required integrating ideas or information from various sources	☐	☐	☐	☐
e. Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments	☐	☐	☐	☐
f. Come to class without completing readings or assignments	☐	☐	☐	☐
g. Worked with other students on projects **during class**	☐	☐	☐	☐
h. Worked with classmates **outside of class** to prepare class assignments	☐	☐	☐	☐
i. Put together ideas or concepts from different courses when completing assignments or during class discussions	☐	☐	☐	☐
j. Tutored or taught other students (paid or voluntary)	☐	☐	☐	☐
k. Participated in a community-based project (e.g., service learning) as part of a regular course	☐	☐	☐	☐
l. Used an electronic medium (listserv, chat group, Internet, instant messaging, etc.) to discuss or complete an assignment	☐	☐	☐	☐
m. Used e-mail to communicate with an instructor	☐	☐	☐	☐
n. Discussed grades or assignments with an instructor	☐	☐	☐	☐
o. Talked about career plans with a faculty member or advisor	☐	☐	☐	☐
p. Discussed ideas from your readings or classes with faculty members outside of class	☐	☐	☐	☐
q. Received prompt written or oral feedback from faculty on your academic performance	☐	☐	☐	☐
r. Worked harder than you thought you could to meet an instructor's standards or expectations	☐	☐	☐	☐
s. Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)	☐	☐	☐	☐
t. Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	☐	☐	☐	☐
u. Had serious conversations with students of a different race or ethnicity than your own	☐	☐	☐	☐
v. Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values	☐	☐	☐	☐

2 **During the current school year, how much has your coursework emphasized the following mental activities?**

	Very much	Quite a bit	Some	Very little
a. **Memorizing** facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	☐	☐	☐	☐
b. **Analyzing** the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	☐	☐	☐	☐
c. **Synthesizing** and organizing ideas, information, or experiences into new, more complex interpretations and relationships	☐	☐	☐	☐
d. **Making judgments** about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	☐	☐	☐	☐
e. **Applying** theories or concepts to practical problems or in new situations	☐	☐	☐	☐

3 **During the current *school year*, about how much reading and writing have you done?**

a. Number of assigned textbooks, books, or book-length packs of course readings

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

b. Number of books read on your own (not assigned) for personal enjoyment or academic enrichment

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

c. Number of written papers or reports of **20 pages or more**

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

d. Number of written papers or reports **between 5 and 19 pages**

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

e. Number of written papers or reports of **fewer than 5 pages**

☐ None ☐ 1-4 ☐ 5-10 ☐ 11-20 ☐ More than 20

4 **In a *typical week*, how many homework problem sets do you complete?**

	None	1-2	3-4	5-6	More than 6
a. Number of problem sets that take you **more** than an hour to complete	☐	☐	☐	☐	☐
b. Number of problem sets that take you **less** than an hour to complete	☐	☐	☐	☐	☐

5 **Mark the box that best represents the extent to which your examinations during the current school year have challenged you to do your best work.**

Very little ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 Very much

6 **During the current school year, about how often have you done each of the following?**

	Very often	Often	Some-times	Never
a. Attended an art exhibit, gallery, play, dance, or other theater performance	☐	☐	☐	☐
b. Exercised or participated in physical fitness activities	☐	☐	☐	☐
c. Participated in activities to enhance your spirituality (worship, meditation, prayer, etc.)	☐	☐	☐	☐
d. Examined the strengths and weaknesses of your own views on a topic or issue	☐	☐	☐	☐
e. Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	☐	☐	☐	☐
f. Learned something that changed the way you understand an issue or concept	☐	☐	☐	☐

7 **Which of the following have you done or do you plan to do before you graduate from your institution?**

	Done	Plan to do	Do not plan to do	Have not decided
a. Practicum, internship, field experience, co-op experience, or clinical assignment	☐	☐	☐	☐
b. Community service or volunteer work	☐	☐	☐	☐
c. Participate in a learning community or some other formal program where groups of students take two or more classes together	☐	☐	☐	☐
d. Work on a research project with a faculty member outside of course or program requirements	☐	☐	☐	☐
e. Foreign language coursework	☐	☐	☐	☐
f. Study abroad	☐	☐	☐	☐
g. Independent study or self-designed major	☐	☐	☐	☐
h. Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, etc.)	☐	☐	☐	☐

8 **Mark the box that best represents the quality of your relationships with people at your institution.**

a. Relationships with **other students**

Unfriendly, Unsupportive, Sense of alienation ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 Friendly, Supportive, Sense of belonging

b. Relationships with **faculty members**

Unavailable, Unhelpful, Unsympathetic ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 Available, Helpful, Sympathetic

c. Relationships with **administrative personnel and offices**

Unhelpful, Inconsiderate, Rigid ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 Helpful, Considerate, Flexible

9 About how many hours do you spend in a typical 7-day week doing each of the following?

a. Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

b. Working for pay **on campus**

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

c. Working for pay **off campus**

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

d. Participating in co-curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

e. Relaxing and socializing (watching TV, partying, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

f. Providing care for dependents living with you (parents, children, spouse, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

g. Commuting to class (driving, walking, etc.)

☐ 0 ☐ 1-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-25 ☐ 26-30 ☐ More than 30
Hours per week

10 To what extent does your institution emphasize each of the following?

	Very much	Quite a bit	Some	Very little
a. Spending significant amounts of time studying and on academic work	☐	☐	☐	☐
b. Providing the support you need to help you succeed academically	☐	☐	☐	☐
c. Encouraging contact among students from different economic, social, and racial or ethnic backgrounds	☐	☐	☐	☐
d. Helping you cope with your non-academic responsibilities (work, family, etc.)	☐	☐	☐	☐
e. Providing the support you need to thrive socially	☐	☐	☐	☐
f. Attending campus events and activities (special speakers, cultural performances, athletic events, etc.)	☐	☐	☐	☐
g. Using computers in academic work	☐	☐	☐	☐

11 To what extent has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?

	Very much	Quite a bit	Some	Very little
a. Acquiring a broad general education	☐	☐	☐	☐
b. Acquiring job or work-related knowledge and skills	☐	☐	☐	☐
c. Writing clearly and effectively	☐	☐	☐	☐
d. Speaking clearly and effectively	☐	☐	☐	☐
e. Thinking critically and analytically	☐	☐	☐	☐
f. Analyzing quantitative problems	☐	☐	☐	☐
g. Using computing and information technology	☐	☐	☐	☐
h. Working effectively with others	☐	☐	☐	☐
i. Voting in local, state, or national elections	☐	☐	☐	☐
j. Learning effectively on your own	☐	☐	☐	☐
k. Understanding yourself	☐	☐	☐	☐
l. Understanding people of other racial and ethnic backgrounds	☐	☐	☐	☐
m. Solving complex real-world problems	☐	☐	☐	☐
n. Developing a personal code of values and ethics	☐	☐	☐	☐
o. Contributing to the welfare of your community	☐	☐	☐	☐
p. Developing a deepened sense of spirituality	☐	☐	☐	☐

12 Overall, how would you evaluate the quality of academic advising you have received at your institution?

☐ Excellent
☐ Good
☐ Fair
☐ Poor

13 How would you evaluate your entire educational experience at this institution?

☐ Excellent
☐ Good
☐ Fair
☐ Poor

14 If you could start over again, would you go to the *same institution* you are now attending?

☐ Definitely yes
☐ Probably yes
☐ Probably no
☐ Definitely no

15 Write in your year of birth: 1 9 _ _

16 Your sex
- ☐ Male
- ☐ Female

17 Are you an international student or foreign national?
- ☐ Yes
- ☐ No

18 What is your racial or ethnic identification? (Mark only one.)
- ☐ American Indian or other Native American
- ☐ Asian, Asian American, or Pacific Islander
- ☐ Black or African American
- ☐ White (non-Hispanic)
- ☐ Mexican or Mexican American
- ☐ Puerto Rican
- ☐ Other Hispanic or Latino
- ☐ Multiracial
- ☐ Other
- ☐ I prefer not to respond

19 What is your current classification in college?
- ☐ Freshman/first-year
- ☐ Sophomore
- ☐ Junior
- ☐ Senior
- ☐ Unclassified

20 Did you begin college at your current institution or elsewhere?
- ☐ Started here
- ☐ Started elsewhere

21 Since graduating from high school, which of the following types of schools have you attended other than the one you are attending now? (Mark all that apply.)
- ☐ Vocational or technical school
- ☐ Community or junior college
- ☐ 4-year college other than this one
- ☐ None
- ☐ Other

22 Thinking about this current academic term, how would you characterize your enrollment?
- ☐ Full-time
- ☐ Less than full-time

23 Are you a member of a social fraternity or sorority?
- ☐ Yes
- ☐ No

24 Are you a student-athlete on a team sponsored by your institution's athletics department?
- ☐ Yes
- ☐ No (Go to question 25.)

On what team(s) are you an athlete (e.g., football, swimming)? Please answer below:

25 What have most of your grades been up to now at this institution?
- ☐ A
- ☐ A-
- ☐ B+
- ☐ B
- ☐ B-
- ☐ C+
- ☐ C
- ☐ C- or lower

26 Which of the following best describes where you are living now while attending college?
- ☐ Dormitory or other campus housing (not fraternity/sorority house)
- ☐ Residence (house, apartment, etc.) within **walking distance** of the institution
- ☐ Residence (house, apartment, etc.) within **driving distance** of the institution
- ☐ Fraternity or sorority house

27 What is the highest level of education that your parent(s) completed? (Mark one box per column.)

Father	Mother	
☐	☐	Did not finish high school
☐	☐	Graduated from high school
☐	☐	Attended college but did not complete degree
☐	☐	Completed an associate's degree (A.A., A.S., etc.)
☐	☐	Completed a bachelor's degree (B.A., B.S., etc.)
☐	☐	Completed a master's degree (M.A., M.S., etc.)
☐	☐	Completed a doctoral degree (Ph.D., J.D., M.D., etc.)

28 Please print your major(s) or your expected major(s).

a. Primary major (Print only one.):

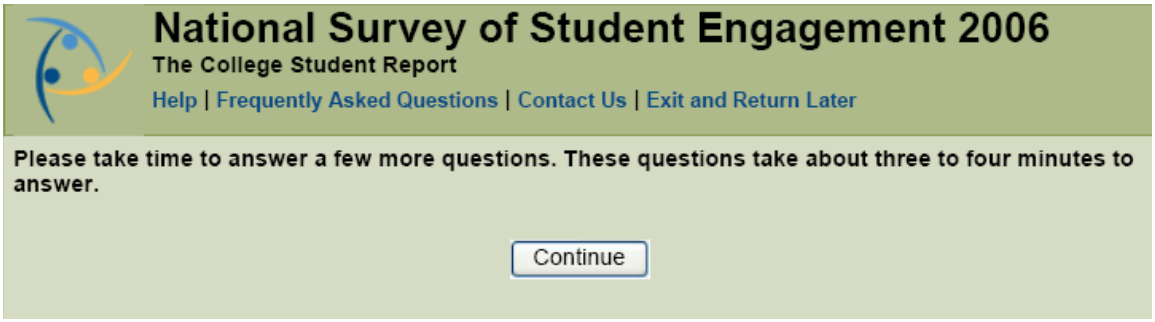
b. If applicable, second major (not minor, concentration, etc.):

THANKS FOR SHARING YOUR VIEWS!

After completing the survey, please put it in the enclosed postage-paid envelope and deposit it in any U.S. Postal Service mailbox. Questions or comments? Contact the National Survey of Student Engagement, Indiana University, 1900 East Tenth Street, Eigenmann Hall Suite 419, Bloomington IN 47406-7512 or nsse@indiana.edu or www.nsse.iub.edu.

Appendix D:

Supplementary NSSE items focusing on co-curricular engagement



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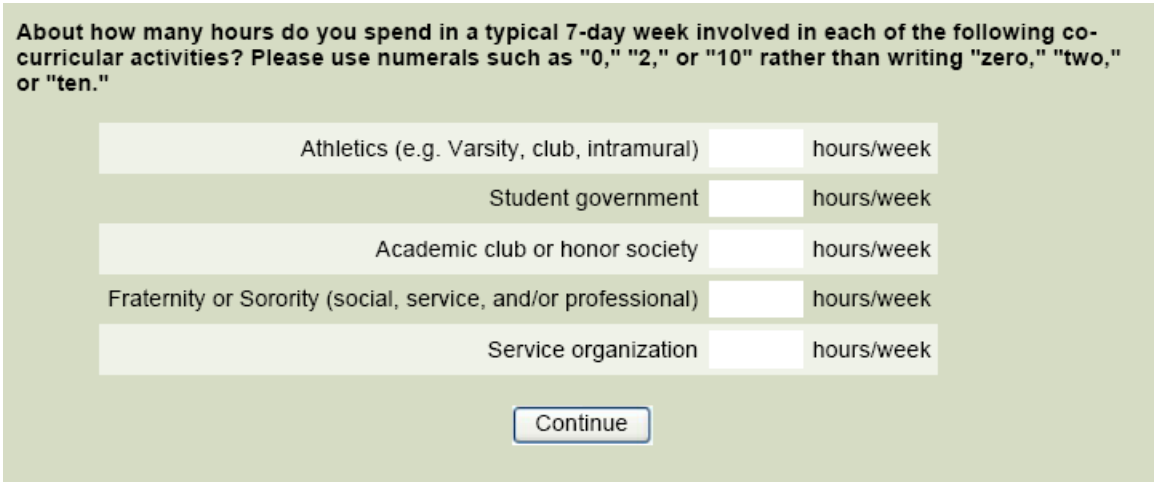
Please take time to answer a few more questions. These questions take about three to four minutes to answer.

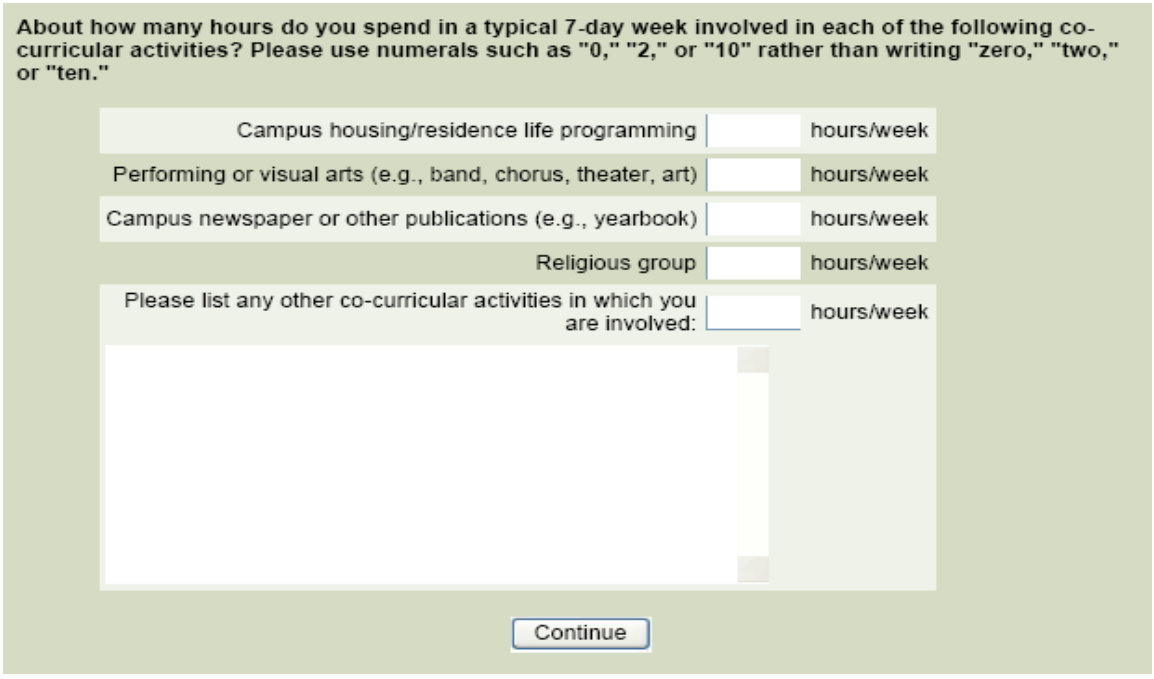
Continue



About how many hours do you spend in a typical 7-day week involved in each of the following co-curricular activities? Please use numerals such as "0," "2," or "10" rather than writing "zero," "two," or "ten."

Athletics (e.g. Varsity, club, intramural)		hours/week
Student government		hours/week
Academic club or honor society		hours/week
Fraternity or Sorority (social, service, and/or professional)		hours/week
Service organization		hours/week

Continue



About how many hours do you spend in a typical 7-day week involved in each of the following co-curricular activities? Please use numerals such as "0," "2," or "10" rather than writing "zero," "two," or "ten."

Campus housing/residence life programming		hours/week
Performing or visual arts (e.g., band, chorus, theater, art)		hours/week
Campus newspaper or other publications (e.g., yearbook)		hours/week
Religious group		hours/week
Please list any other co-curricular activities in which you are involved:		hours/week

Continue

Considering your involvement with these co-curricular activities during the current academic year, to what extent do you agree or disagree with the following statements?

I spend a significant amount of time...

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree	Not applicable
Attending meetings, practices, rehearsals, or competitions	○	○	○	○	○	○	○
Managing specific projects for the organization(s)	○	○	○	○	○	○	○
Leading or planning meetings	○	○	○	○	○	○	○
Influencing organizational policy decisions	○	○	○	○	○	○	○

Continue

To what extent to you agree or disagree with the following statements.

Co-curricular activities...

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
Are for pure enjoyment	○	○	○	○	○	○
Help me increase my self-confidence	○	○	○	○	○	○
Enhance my academic work	○	○	○	○	○	○
Help me relieve stress	○	○	○	○	○	○
Are the best way to meet new people	○	○	○	○	○	○
Make me feel more connected to my college/university	○	○	○	○	○	○
Help me acquire skills that I can use on the job after college	○	○	○	○	○	○
Help me decide the type of work I may want to do after college	○	○	○	○	○	○

Continue

To what extent to you agree or disagree with the following statements.

Co-curricular activities…

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
Will enhance my resume and make me look more attractive to future employers	○	○	○	○	○	○
Help me pay for college expenses (i.e., athletic scholarship)	○	○	○	○	○	○
Help me give back to the campus community	○	○	○	○	○	○
Are a good way for me to help others	○	○	○	○	○	○
Help me develop leadership skills	○	○	○	○	○	○

Continue

Please cite any other major reasons you have become involved with co-curricular activities.

Continue

To better understand why you are not participating in co-curricular activities this current academic year, tell us the extent to which you agree or disagree with the following statements.

I do not participate in co-curricular activities because...

	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree	Not applicable
My academic coursework takes first priority	○	○	○	○	○	○	○
As a distance education student, it is too difficult to become involved	○	○	○	○	○	○	○
I do not believe it is a good use of my time	○	○	○	○	○	○	○
Working for pay takes up too much of my time	○	○	○	○	○	○	○
My commute to school makes it difficult to become involved	○	○	○	○	○	○	○
I am not interested in any organized groups at my institution	○	○	○	○	○	○	○
I enjoy individual activities (e.g., reading, video games, watching TV)	○	○	○	○	○	○	○
My time is devoted to non-campus-sponsored activities (e.g., community or religious groups)	○	○	○	○	○	○	○

Continue

Please cite any other major reasons you have not become involved with co-curricular activities.

Continue

Appendix E: Curriculum Vitae

Chad Ahren

2671 Central Terrace, Memphis, TN 38111 Phone: (573)-310-9405 Email: ahrenc@rhodes.edu

Education:

Doctor of Philosophy, Indiana University, Bloomington, IN — March 2009
Major: Higher Education and Student Affairs
Minor: Educational Psychology
Working dissertation title: "Disentangling the Unique Effects of Co-curricular Engagement on Self-Reported Student Learning"

Master of Science, Canisius College, Buffalo, NY — May 2001
College Student Personnel Administration
Thesis: "Does Student Perception of the College Union Match its Mission?"
Kappa Delta Pi International Education Honor Society

Bachelor of Arts, Hiram College, Hiram OH — May 1998
Major: Philosophy
Phi Beta Kappa

Employment and Leadership Experience:

Director of Student Conduct, Rhodes College — July 2008 - present

- Coordinate adjudication of all student conduct incidents
- Advise Honor Council, which hears cases on academic dishonesty, and Social Regulations Council, which hears cases involving breaches of the social code
- Collaborate with residence life leadership to ensure safe and productive student living environments
- Integrate efforts of several adjudicating bodies across campus
- Partner with faculty to globally address trends in academic cheating or stealing
- Act as ambassador for the College Honor Code, including coordinating programming to increase awareness and consideration of contextual ethics
- Assist in College-wide assessment of efforts involving co-curricular engagement
- Support commuting students with identification of useful resources and adjustment of policy and procedure to ensure a positive experience
- Facilitate positive relationships between off-campus students and their communities
- Contribute to team-wide efforts by assisting with academic advising and degree audits
- Respond to and address student crises of all levels of severity

Client Services Coordinator, National Survey of Student Engagement — June 2007 – July 2008

- Supported the operation of a major national survey administered at 750 institutions with approximately 500,000 undergraduate respondents
- Supervised eight Project Associates who provide support to institutions using NSSE and related surveys
- Conceptualized and facilitated a team concept for Client Services that spans three survey projects
- Consulted with institutions to reconcile survey administration and data-gathering difficulties
- Assisted users with challenges in interpreting and sharing data resulting from our surveys
- Served as the liaison to the IU Center for Survey Research, coordinating technical aspects of survey administration
- Designed and implemented training program for incoming staff

Project Associate, National Survey of Student Engagement July 2005 – May 2007

- Provided comprehensive client services to 160 institutions administering NSSE
- Facilitated complex materials collection from institutions
- Acted as initial point of contact and resource for participating schools
- Resolved institution-level issues and complications with survey administration, both conceptual and technical
- Disseminated findings through providing institutional reports, presenting at conferences, and representing the survey to hundreds of constituents nationwide
- Collaborated on creating experimental items administered with NSSE asking about co-curricular experiences
- Led research on effective use of NSSE data by student affairs professionals

Director of Student Activities and Leadership Development/Greek Advisor,
Westminster College June 2001 – May 2005

- Reviewed and adjudicated student conduct code infractions, requiring interpretation and educating students on community expectations for behavior
- Supervised professional staff in multicultural affairs, student publications, and intramurals as well as one administrative and dozens of student staff
- Advised Student Government Association and its Finance Committee, which was solely responsible for disbursement of $210,000 in activities fees
- Administered all operations and maintenance of Hunter Activity Center and Mueller Student Center, the college union and a multi-purpose event facility
- Guided Interfraternity Council (6 NIC chapters) and Panhellenic Council (3 NPC chapters), whose constituents comprised 65% of student body
- Assisted in creation and implementation of campus-wide crisis response protocols
- Created and enforced safety guidelines for fraternity houses, coordinating with local fire and health safety personnel to ensure safe living environments for members
- Collaborated with Center for Leadership and Service in establishing and maintaining direct and applied leadership programs
- Conceptualized and assisted in delivery of New Student Week activities
- Examined campus culture and conceptualized strategies for reconciling tension between students both affiliated and unaffiliated with fraternities and sororities
- Taught first-year seminar to students, orienting them to college-level expectations in homework load, writing mechanics and style, and leadership philosophies

Graduate Assistant in Greek Affairs, Center for Campus Life,
Rochester Institute of Technology August 2000 – May 2001

- Co-advised Interfraternity Council and directly advised IFC Executive Board
- Advised Greek Council judicial processes by which constituent chapters were held accountable to community-wide standards
- Coordinated with Greek Council and 25 chapters to ensure they implement successful campus-wide events
- Established and organized all aspects of annual Greek Leadership Retreat, attended by 150 students, faculty, and staff
- Wrote successful grant proposal for additional Leadership Retreat funding
- Compiled current chapter operations data including grades, membership and risk management compliance
- Published quarterly newsletter containing chapter and system news

Student Leadership Development Intern, Miami University, Oxford, Ohio May – December 2000
- Assessed evaluations of past leadership seminars at Miami
- Rewrote curriculum and syllabi for 11 sections and 250 students
- Incorporated current leadership and service theory into updated curricula
- Enhanced course experience through unique BlackBoard course site integration
- Promoted Miami Leadership Commitment via several professional conventions and presentations

Hall Director, Hilbert College, Hamburg, NY August 1999 – June 2000
- Managed several crises involving residential and commuter students
- Created thematic and educational programming to encourage student development
- Mediated developing and established conflicts between residents
- Ensured proper safety and maintenance of residence facility
- Assisted in educational and social campus programming for community enhancement

Student Activity Advisor, Arizona State University West 1998 – 1999
- Advised student clubs in event planning and adherence to university policies
- Planned, promoted and evaluated department-sponsored, student-driven events and activities
- Maintained club files and publicity material
- Coordinated with Student Government to enable proper club involvement in democratic process

Courses Delivered:

Indiana University
- U212 – "Leadership and Popular Culture" Fall 2007, Spring 2008
- U547 – "Master's Practicum Seminar" – joining practice and theory Spring 2006, 2007

Westminster College
- First-Year Seminar: "Leadership's Transformation from Theory to Popular Culture" Fall 2004
- Leadership Laboratories - One-hour topical courses in leadership
- "Ethical Leadership" Spring 2003
- "Leadership in Student Organizations" Fall 2002

Presentations:

American College Personnel Association, Washington, DC March 28 – April 1, 2009
- "What Are the Real Benefits of Co-Curricular Engagement?"

American College Personnel Association, Atlanta, GA March 29 – April 2, 2008
- "No Time on my Side: Examining Factors Affecting Co-curricular Involvement"
- "Co-curricular Benefits: Which Activities are Best for Student Learning?"

American College Personnel Association/National Association of Student Personnel Administrators, Orlando, FL March 30 – April 4, 2007
- "Using NSSE Data to Assess and Guide Student Affairs Practice"
- "Making the Familiar Strange: How a Culture Audit can Boost your Advising Impact"

American College Personnel Association, Minneapolis, MN March 30 – April 2, 2003
- "It Need not be Mythology: Understanding Fraternities and Sororities as an Auxiliary Duty"

American College Personnel Association, Boston, MA March 4-7, 2001
- "Creating an Integrated Classroom in Leadership Education"

American Leadership Educators, Minneapolis, MN July 6-9, 2001
- "Using Technology in the Classroom to Enhance Leadership Development"

International Leadership Association, Toronto, Canada November 3-5, 2000
- "Using Technology in the Classroom to Enhance Leadership Development"

Publications:

Ahren, C., Ryan, H. G., and Niskode-Dossett, A. S. (in press). Making the familiar strange: How a culture audit can boost your advising impact. *About Campus.*

Ahren, C., Ryan, H. G., and McKinley-Massa, R. (2008). The how and why of cracking open and using assessment results. *About Campus,* 13(2), 29-32.

Ahren, C. (2008). Closing the gap with student affairs staff: From margin to mainstream. *New Directions in Higher Education,* 2008 (Fall), 83-91.

Ahren, C. (2006). The process by which students come to hold each other accountable to standards of conduct. *Journal of the Indiana University Student Personnel Association, 2007*.

Ahren, C. (2003). Book review - Leadership on the line: Staying alive through the dangers of leading. *Perspectives*, 2003(Spring), 22-23.

Ahren, C. (2002). A perspective of an unaffiliated fraternity/sorority advisor. *Perspectives*, 2002(Fall), 13-14.

Papers added to institutional archives:

Ahren, C. (2005). The rise and fall of the Liberal Studies Plan at Franklin College. Franklin, IN: Franklin College.

Ahren, C. (1999). The Hiram Study Plan: Seventy years of curricular change. Hiram, OH: Hiram College.

Service and related experience:

Education City, Doha, Qatar
Consultant on use of assessment data in unique international environments November 2-3, 2008

American College Personnel Association **1999 – present**
Program Reviewer, General Convention 2004 - 2008

International Leadership Association **2000 – 2005**
Education Global Learning Community Co-Convenor, International Leadership Association 2004
Pre-Conference planner, ILA, Guadalajara, Jalisco, Mexico 2003

Rhodes College
Quality Enhancement Plan Assessment Team 2008-2009
Alcohol Task Force 2008-2009

Westminster College
Leader, North Central Accreditation Self-Study Subcommittee 2002 - 2004
Member, Remley Women's Center Steering Committee 2001 - 2004
Member, Alumni Learning Commission on Fraternity Affairs 2004 - 2005
Member, Task Force for Strategic Alliance with William Woods University 2003 - 2005
Member, Task Force on Greek New Member Education 2002 - 2003
Member, Major Lectures Task Force 2002
Member, Task Force for Student Success Initiatives 2004

Association of Fraternity Advisors **2001 – 2005**
Conference Graduate Staff November 28 – December 2, 2000

Kettering Foundation
Contributor, Kettering Foundation Community Leadership Summit, Dayton, OH June 8, 2000

Other Relevant Experience:

President, Canisius College Student Personnel Graduate Association 1999 - 2000
Head Coach, Women's Volleyball Team, Hilbert College 1999
Recreation Leader, City of Phoenix, AZ 1998 - 1999
Captain and co-founder, Men's Club Volleyball team, Hiram College 1994 - 1998
Member, Academic Program Committee, Hiram College 1995 - 1998

- Deliberated with faculty and administration to effect changes in curriculum

Chad Ahren

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References

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